

Chapter 5

5.0 ALTERNATIVES

5.1 INTRODUCTION

5.1.1 Regulatory Requirements for Alternatives Analyses

With respect to the permit application, the purpose of the proposed project under discussion in Chapter 4 of this Environmental Impact Statement (EIS) has been defined as follows: "To develop in northeastern New Jersey an economically viable mixed-use commercial development that consists of a super-regional retail/entertainment center, hotel, and office space, with warehouse/distribution and mass-transit facilities to support the commercial development." As proposed, this project would require a permit from USACE for the deposition of fill material into waters of the United States, including wetlands. This permit decision, 'the proposed action', which is required under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, has been determined to be a major Federal Action significantly affecting the quality of the human environment. The proposed action under consideration in this EIS is, therefore, the decision of USACE whether to issue or deny a permit for the project proposed by the applicant, and whether to attach conditions to a permit if issued. Such action requires preparation of an EIS under the National Environmental Policy Act (NEPA) to evaluate the potential impacts of, and alternatives to, the proposed action.

Preparation of an EIS under NEPA includes a requirement for the consideration of alternatives to a proposed action. The purpose of evaluating a range of alternatives to a proposed action is to determine whether there are alternatives to that action which can accomplish the project purpose with a lesser amount of adverse environmental impact. Within the context of NEPA, alternatives to a proposed action should be evaluated to assess whether impacts can be avoided, minimized and/or mitigated. The proposed alternative for the issuance of a fill permit must be evaluated in the context of other alternative projects that may have different and/or lesser environmental impacts.

The United States Council on Environmental Quality (CEQ) regulations for NEPA compliance direct that reasonable and practicable alternatives to an action be evaluated in an EIS, even if these alternatives are not within the jurisdiction of the agency. Under Section 404 of the Clean Water Act 404 (b) (1) Guidelines, no permit may be granted if there is a practicable alternative to the action proposed by an applicant that would fulfill the project purpose and need and have less adverse impact on the aquatic environment, provided that the alternative does not have other significant adverse environmental consequences. A discussion of Section 404(b)(1) Guidelines is presented in Chapter 9. Pursuant to the 404(b)(1) Guidelines, an alternative site is practicable if it is available and capable of being utilized after taking into consideration cost, existing technology, and logistics as they relate to overall project purposes. A site not presently owned by an applicant but which can reasonably be obtained, utilized, expanded, or managed in order to fulfill the basic purpose of the proposed activity would be considered as a practicable alternative.

The analysis of alternatives described in this EIS was conducted pursuant to the criteria contained in (CEQ) *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR Parts 1500 - 1508) and follow-up guidance from CEQ; and the U.S. Army Corps of Engineers (USACE) (33 CFR Part 230 and 325, Appendix B) *Procedures for Implementing the National Environmental Policy Act (NEPA)*. USACE regulations state that, to the extent possible, an alternatives analysis for NEPA can be combined with the consideration of alternatives that is also required by the Clean Water Act Section 404(b)(1) Guidelines. This Chapter is intended to fulfill the NEPA requirement for the analysis of alternatives as well as the requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

5.1.2 History of Project Alternatives Analysis

The proposed action under consideration in this EIS is the decision of USACE whether to grant or deny a permit for the project proposed by the applicant. The alternatives under consideration to this action are therefore the issuance of a permit without conditions, the issuance of a permit with conditions, or the denial of a permit. Under Section 404 of the Clean Water Act, no permit may be granted if there is a practicable alternative to the action would fulfill the basic project purpose and have less adverse impact on the aquatic environment. The applicant has undertaken an alternatives analysis for its proposed project. The alternatives identified within the applicant's analysis are presented sequentially within this EIS. The initial phase of the alternatives analysis incorporated a range of proposals designed to reduce the overall project footprint (Section 5.2.2). This was followed by an evaluation of the No-Action Alternative, the consequences of not building the project (Section 5.3). USACE then directed that the applicant conduct an inventory of potential alternative sites that would fulfill the project purpose (Section 5.4). The inventory is presented in Table 5.4-3 and is supported by detailed data sheets for each site (Cascino 1992, 2001, Empire Ltd, 2001). The original inventory conducted in 1992 was updated in 2001, including an updated analysis based on market criteria, subsequent to preparation of the DEIS. The alternatives analysis was further developed with the design and evaluation of on-site alternatives, incorporating various project configurations and layouts (Section 5.5), and finally presenting alternative construction techniques and roadway alignments which could further reduce project impacts and footprint (Section 5.5).

5.1.3 Range of Alternatives Presented.

Alternatives to a project proposed by an applicant may include alternative locations to the same project (off-site alternatives), design and construction variations to the project on the same site (on-site alternatives), or the No-Action alternative, in which the project is abandoned entirely. Whether an alternative site can be a reasonable alternative as defined by NEPA regulations depends on several key conditions: (1) an alternative site must be located within a geographic area in which the purpose of the project can be realized; and (2) an alternative site must have appropriate characteristics, such as adequate size and configuration, as well as specific market requirements to realize the project's purpose.

Alternatives that are outside the jurisdiction of the Clean Water Act are appropriate for inclusion in the analysis, as is the No-Action Alternative (which could include permit denial or application withdrawal). Such alternatives are examined to allow a complete evaluation of the environmental impacts, and a fully informed decision regarding the permit application.

In evaluating the range of alternatives, USACE conducted an initial screening of information submitted by the applicant, information made available in the DEIS prepared for the NJMC Special Area Management Plan (SAMP), and information received from federal and state government agencies and the public during processing of the application to date. This chapter provides an analysis of the feasibility and potential environmental consequences of each alternative site, of alternative site footprints within the proposed site, and alternative construction methods, including roadway alignments.

5.2 THE PROPOSED PROJECT

5.2.1 Introduction

Empire Ltd., the permit applicant, has partnered with the Mills Corporation, a national real estate trust that has developed and operates several mixed-use facilities throughout the United States. Empire, Ltd., in conjunction with the Mills Corporation, has proposed the construction of a Mills Center on Empire, Ltd. property in northeastern New Jersey, having identified the area as a prime location based on market viability criteria. The proposed project would be a mixed-use development comprising a combination of interrelated elements including retail, entertainment, hotel, offices, warehousing/distribution, related road systems, multi-decked garages and grade-level parking, and a mass-transit facility.

As stated by the applicant, Mills Centers are designed to function simultaneously as super-regional centers, regional centers, and tourist destinations. A super-regional center is defined as a development exceeding 750,000 square feet and including three or more department stores. Mills Centers typically incorporate a mix of retail, off-price, outlet, and specialty venues in an enclosed, two-story format with single-level operation, and a variety of dining and entertainment opportunities. Mills Centers also typically have 15 or more anchor/major stores and 200 or more specialty stores, in contrast to traditional regional retail centers, which typically have two to four anchor/department stores. A Mills Center integrates a mix of supporting activities, employment, and amenities as a way to enhance the convenience, accessibility and draw of commercial centers. The Mills Corporation promotes its Centers nationally and internationally as travel and tourism sites. Mills Centers are designed to optimize the combination of retail and entertainment in an integrated facility, to enhance the attraction of commercial venues for both tenants and customers and contribute to the economic viability of a mixed-use development.

The applicant has stated that its application for a DA permit for all components should not be severed into its individual elements. USACE has determined that the overall project purpose is to build a mixed-use, integrated project, and has agreed that a minimum parcel size of 132 acres would be required in order to meet the project purpose.

The following components (Table 5.2-1) are proposed for the mixed-use development project.

**Table 5.2-1
Components of the Proposed Project**

Component	Size
Super Regional Retail/Entertainment Center	2,557,802 Square Feet (SF)
Regional Office Center	1,500,000 SF
Hotel	521-1000 Guest Rooms
Warehousing/Distribution	50,000 SF
Regional Transit Facility (Express, local, and shuttle bus service)	10,000 SF

5.3 NO-ACTION ALTERNATIVE

5.3.1 Description

Regulations implementing NEPA at 40 CFR Section 1502.14(d) require that the alternative of "no action" be considered in an EIS. The No-Action Alternative is included in the analysis as a basis for comparison. It allows for an evaluation of the environmental impacts that an action will cause, relative to the situation that would exist if the action were not undertaken. Depending on the nature of the proposed action under evaluation, determining what constitutes "no action" may vary as follows:

- Where an action would involve an ongoing regulatory program that continues even as new plans are developed, "no action" would be defined as "no change" from current management direction or level of management intensity. In other words, no action would mean continuing with the present course of action until that course was changed.
- Another interpretation of "no action" would relate directly to decision-making, where "no action" would mean that the proposed activity would not take place. The resulting environmental effects from taking "no action" in such a situation would be compared with the effects of deciding that the proposed activity, or an alternative activity, would go forward.

For this action, the No-Action Alternative is one that results in no construction requiring a USACE permit and therefore no filling of wetlands on the Empire Tract. Under the No-Action Alternative the Empire Tract would remain in its current state.

Part of the evaluation of the No-Action Alternative is a discussion of the consequences of other likely uses of a project site, should the permit sought by the applicant not be issued. Since the 587-acre site contains only about 18 acres that are not regulated as wetlands or waters of the United States, large-scale development on the site could not proceed without required federal and state permits (see Figure 4.2-1). Existing uplands on the Empire Tract consist of:

- 5.65 acres near the Transco gas pipeline right-of-way. Construction of buildings within this right-of-way is prohibited.
- 5.50 acres of uplands at the end of Jomike Court. The construction of limited light industrial facilities could be possible.
- 4.04 acres adjacent to Outwater Place. These uplands are generally long and narrow and unsuitable for development.
- 1.73 acres of berms along the Hackensack River that are not suitable for development.
- 1.40 acres along Commerce Boulevard. This upland area is long and narrow and unsuitable for development as a result.
- Four additional separate upland areas that total about 0.1 acre that are adjacent to the Empire Tract boundary and are too small for development.

5.3.2 Feasibility of No-Action and Non-Development Scenarios

Under the No-Action Alternative, a permit to develop the Empire Tract according to the proposed project or other alternative design configurations would not be issued. Other site uses, not requiring substantial wetland fill, such as wetland mitigation banking and/or site restoration, could evolve over time, and have been suggested by many, including State of New Jersey officials in a letter dated May 16, 2002. In addition, studies are contemplated to consider preservation/restoration within the Hackensack Meadowlands District, some of which include the participation of USACE. These studies would consider wetland mitigation and site restoration, and may involve the Empire Tract. Although these could present potential options for the future use of the site, at the current time USACE has not received any specific proposals for these uses.

The only current site-specific proposal of which USACE is aware is a proposal by the NY/NJ Baykeeper, a non-profit organization, which advocates the elimination of the dikes and berms that currently prevent the Empire Tract from receiving regular tidal flooding. Restoring tidal flooding to the site would aid the re-establishment of native wildlife habitat on the Empire Tract. The Baykeeper contemplates that flood protection would be provided by increasing the elevation of existing berms adjacent to developed areas, and by the installation of special gates that would remain open except in the event of a major storm. Tide gates could be closed on the low tide preceding a large storm, thus leaving the marsh available to hold storm water, and thereby provide flood protection.

The Baykeeper's project is currently not considered a probable outcome of No-Action, as no funding has been committed, and the land is privately owned. Notwithstanding the possibility of future funding sources for such proposals, the private ownership of the site, and the desire of the owner of the site (Empire, Ltd.) to proceed with the currently proposed mixed-use development, presently precludes implementation of proposals such as those proposed by the Baykeeper. Such proposals could not be implemented without permission of the site owner, Empire, Ltd. The site owner has not indicated an interest in using the site for restoration purposes such as those described.

It is possible if this permit application were denied, Empire, Ltd. would apply for another permit for a different proposal. However, the applicant has made no suggestion of this intention. NEPA regulations do not require consideration of proposals that are considered "speculative" at this time.

5.3.3 Environmental Impacts of No Action Alternative

5.3.3.1 Traffic

Under the No-Action Alternative, the following transportation projects would not be provided in the near term, as they are either uniquely associated with or critically dependent on the proposed project:

- New access to the New Jersey Turnpike;
- A new road parallel to Washington Avenue;
- Construction of a mass-transit facility at the Empire site; and
- Modifications to local intersections (See Section 7.15 for details).

Under No-Action conditions the project would not be built and thus traffic impacts from the project would not occur. The roadway projects described above designed to offset such impacts would therefore not be necessary. Regional transportation projects, to the extent that they are associated with the proposed project, would also not be provided. Under the No-Action Alternative, therefore, traffic conditions are expected to remain similar to existing conditions.

5.3.3.2 Air Quality

As no additional project-related traffic would be generated under No-Action conditions, air quality impacts under No-Action conditions would not be expected to differ from existing conditions. Ongoing efforts by members of the private and public sector to reduce emissions would continue to have a beneficial effect on overall air quality in the area. No public transit would be provided at the Empire Tract location. The West Shore Commuter line is proposed by NJ Transit as a separate and independent project. NJ Transit contemplates providing a Mills station on this line. No adjacent projects have been identified that would share in the benefits of a transit stop at the Empire Tract, so no adjacent land uses would be adversely affected if such a transit stop were not provided.

5.3.3.3 Noise

As no additional project-related traffic would be generated under No-Action conditions, noise impacts under No-Action conditions would not be expected to differ from existing conditions.

5.3.3.4 Wetlands

No wetlands would be filled or impacted on the Empire Tract under the No-Action Alternative. Conditions would be expected to remain similar to those presently existing on the Empire Tract.

5.3.3.5 *Socioeconomics*

Under the No-Action Alternative, the Empire Tract would remain undeveloped. Therefore, future socioeconomic regional effects, as presented in 7.19, would not be realized.

5.4 OFF-SITE ALTERNATIVES

5.4.1 Introduction

The applicant has indicated that the Empire Tract fulfills all of the economic feasibility and logistical criteria (Section 5.5.1.3) that would allow the project purpose to be met, and is the applicant's preferred site (Chapter 4). The on-site alternatives that are presented for the development of the project on the Empire Tract are discussed in Section 5.5. In order to comply with the regulatory requirements of NEPA and the 404(b)(1) Guidelines alternatives analysis, in terms of avoidance, minimization and mitigation, USACE also conducted a comprehensive evaluation of potential off-site alternatives to development of the Empire Tract.

USACE directed that the applicant conduct a detailed inventory of all potential practicable off-site alternatives to the proposed project that could fulfill the project Purpose and Need (as defined in Chapter 4). In order to focus the analysis within a feasible area, a study area for the inventory of off-site alternatives was defined by USACE. The identification and evaluation of off-site alternatives was confined to this study area.

To further focus the analysis onto sites that could potentially be feasible and practicable alternatives to the proposed project, USACE consulted with the applicant and determined that only sites within the study area that met a minimum, pre-determined size threshold, or which could be combined with adjacent parcels to meet the minimum size threshold, should be identified in the inventory and included in the analysis. The minimum size parcel of 132 acres was determined by USACE following extensive analysis (Section 5.4.3). A more conservative minimum size of 115 acres was used by the applicant in conducting their off-site alternatives analysis to identify and evaluate other potential sites for the project (Section 5.4.4.1).

5.4.2 Identification of Study Area for Alternatives Analysis

In accordance with the project purpose, the study area for the proposed project has been defined as northeastern New Jersey comprising the following six counties: Bergen, Essex, Hudson, Middlesex (north of the Raritan River), Passaic, and Union. USACE considers this 804 square mile area to be reasonable and appropriate for an off-site alternatives analysis for this project, and consistent with the basic project purpose (Section 4.2).

USACE has evaluated the appropriate geographic scope for the proposed project. As established in the FEIS, the geographic scope for the proposed project encompasses all of five counties, and a portion of a sixth county (an area of approximately 804 square miles), which is commonly referred to as northeastern New Jersey. The current geographic scope is consistent with the broad geographic scope selected by USACE and other federal agencies for purposes of considering offsite alternatives as part of the NEPA analysis addressed in the SAMP DEIS, which was a regional planning effort.

Market analyses conducted on behalf of the applicant indicated that the six-county area represents a viable market for a super-regional mixed use development (as described in the Project Purpose) in Northern New Jersey (Ernst & Young 1998). The market research indicated

that this area is sufficient to provide sufficient customers (and employees) necessary to support each component of such a mixed-use project and thus meet the project purpose (see Ernst & Young, 1998). The six-county area, as the primary geographic market to be served, is therefore appropriate as an area for the study of potential alternative sites.

5.4.3 Minimum Parcel Size for Alternatives Analysis

5.4.3.1 Introduction

Off-site alternatives located within the study area described above would have to be of adequate size to accommodate a viable mixed-use commercial development in order to fulfill the project purpose and to be considered a feasible alternative. In order to ascertain whether such potential alternative sites would be adequate in size, a minimum parcel size for a mixed-use commercial development was developed for the purposes of the alternatives analysis.

To establish the minimum size for a generic parcel that could accommodate an off-site alternative, the site-specific design parameters of the proposed project were first identified. The design of the proposed project is intended to optimize the site characteristics of the Empire Tract and the performance requirements of a super-regional mixed-use commercial development. To properly assess alternatives, these Empire Tract-specific design parameters were translated into generic minimum site parameters for a generic super-regional mixed-use commercial development, as defined in the project purpose statement.

This translation avoids superimposing characteristics of a specific site (such as the Empire Tract) on alternative sites, as certain parameters are specific to the Empire Tract. Characteristics thus avoided include the following: height restrictions imposed by Teterboro Airport; open space requirements dictated by NJMC zoning regulations; the need for substantial infrastructure improvements to support the development in the currently proposed location; and the need to establish significant water quality detention facilities to address storm water impacts resulting from the topography and land use surrounding the development. If such parameters were applied to other sites with different characteristics, they would unduly impose constraints that are unique to the Empire Tract and not applicable to a generic development site. By contrast, the formulation of generic site development parameters recognizes that each site has unique characteristics and therefore unique design opportunities for realizing the project purpose. The method for determining a minimum site size that would meet the project purpose is described below.

In order to determine the minimum size for an alternative project site, the design parameters of the proposed project were identified as those parameters necessary to fulfill the project purpose. These site-specific design parameters were then compared to typical design parameters in the region for comparable facilities within northeastern New Jersey similar to those included in the proposed project, accounting for efficiencies of space and minimizing site-specific influences from the Empire Tract.

The Project Purpose identifies five main project components: (1) retail/entertainment center; (2) hotel; (3) office space; (4) warehouse/distribution; and (5) mass transit. Table 5.4-1 presents a

listing of each of these five project components with a generic description of the component, including typical characteristics and required amenities that would generally be associated with development of such components. As part of the "Descriptions of Project Component" portion of the table, the estimated size (i.e., square footage, number of rooms, etc.) of each of the components is provided to establish the potential acreage requirements of the components identified in the project purpose.

Table 5.4-1
Mixed-Use Commercial Development
Project Component Descriptions and General Design Footprint
for Off-Site Alternatives Analysis

Project Component	Description of Project Component	Building Footprint	Parking Area Footprint	Basic Component Footprint Area
Super-Regional Retail/ Entertainment Center	15-20± Anchor stores, 200± specialty retail stores, entertainment, associated common area, and associated parking.	1.5 - 2.5 million SF (at 2 stories; 17 - 28.5 acres)	7,500-12,500 spaces (at 5/1,000 SF) (25% of parking at two-levels; 45-75 acres)	62 - 103.5 acres
Hotel/ Conference Center	500 - 1,000 guest rooms, administrative offices; restaurant/night club, coffee shop, and associated parking.	500,000 - 700,000 SF (at 4 stories; 5 - 7 acres)	1,400-2,000 spaces (at 2 spaces per room) (parking garages at 4 stories; 3-4 acres)	8-11 acres
Office Space	1.5 - 2.5 million SF office, day care facility, and associated parking	1.5-2.5 million SF (at 4 stories; 9-14 acres)	4,500-7,500 spaces (at 3/1,000 SF) (parking at two levels; 27-45 acres)	36-59 acres
Warehouse & Distribution	Warehouse office, distribution and warehouse space, and associated parking and loading areas.	150,000-250,000 SF (4-6 acres)	100-167 spaces (at 1/1,500 SF) (1-2 acres)	5-8 acres
Mass-Transit Facility	Local and express bus service, waiting room, concession stand, ticket office, drop-off area, and bus parking.	0.75 acre	0.25 acre	1 acre
PROJECT COMPONENT FOOTPRINT TOTAL (Excludes acreage required for common roadway/infrastructure and open space requirements)		35.75 – 56.25 acres	76.25 - 126.25 acres	112 – 182.5 acres
Source: USACE, 1998.				

5.4.3.2 Minimum Footprint for Individual Project Components

Based upon the size and type of each Project Component, the Building Footprint and Parking Area Footprint presented in Table 5.4-1 were calculated using a range of options that a typical developer would consider, including typical governmental requirements for proper site development. Based on these component calculations, a minimum basic footprint area was determined for each component. The results of that analysis are described below.

Retail/Entertainment Building Footprint

To calculate the minimum footprint of a 1.5-to 2.5-million-SF super-regional retail/entertainment center, a general two-story design was assumed. As typical regional facilities such as the Newport Centre Mall, Short Hills Mall, and Menlo Park Mall operate successfully with a two-level or multi-level design configuration, it was considered appropriate to allow for a generic site to accommodate a large-scale retail/entertainment facility in a two-story configuration. A retail/entertainment facility footprint of 17 to 28.5 acres was thus considered representative of regional development characteristics (including two-story configurations). A footprint of 17 to 28.5 acres was therefore selected as the minimum size footprint for a generic retail/entertainment facility in the region for purposes of off-site alternative analysis.

Parking Facilities Footprint

For parking, a ratio of 5 spaces per 1,000 SF of building area was initially utilized, reflecting parking at grade based upon standard ratios set forth by the Urban Land Institute. Based on at-grade parking, 2.5 million SF of retail space would require 12,500 parking spaces. This would yield 100 acres of parking area, assuming 125 spaces per acre; for 1.5 million SF of retail space, 7,500 parking spaces would be required if all parking were provided at grade. This would yield 60 acres of parking area assuming 125 spaces per acre.

Review of parking facilities in the region, however, indicated that a 25% reduction of the total parking area footprint is not uncommon as a result of use of multi-story parking facilities. Reflecting a regional development characteristic, therefore, it would be appropriate to assume that at least part of the parking for the retail/entertainment center could be on two levels. If 25% of the parking facilities in the region were at two levels, the parking area footprint would be appropriately reduced from 60 to 100 acres (as based on grade-level parking only) to 45 to 75 acres. The same regional two-story parking characteristic is applicable to office parking. Reflecting regional design characteristics of parking facilities associated with offices, this would reduce a single-level parking configuration of 36 to 60 acres to 27 to 45 acres. Parking facilities for a hotel/conference center are commonly provided in a four-story configuration in the region, while parking facilities for warehouse/distribution and mass-transit facilities are typically provided at grade. This translates into a minimum footprint range of 3 to 4 acres for hotel parking, 1 to 2 acres for warehouse parking and 0.25 acre for parking at a related mass-transit facility. This brings the total parking area footprint for a generic mixed-use development to a minimum range of 76.25 to 126.25 acres.

Adding the acreage requirements for the building footprint and parking area footprint yields a Basic Component Footprint Area (last column in Table 5.4-1) for each component (for example, 62 to 103.5 acres for a Super-Regional Retail/Entertainment Center). To obtain a Project Component Footprint Total, the Basic Component Footprint Areas were added for all five components of the project. Adding the numbers for total Building Footprint and total Parking Area Footprint establishes a total footprint range of 112 to 182.5 acres for a generic regional site. The acreage determination presented in Table 5.4-1 is only for the project component buildings and parking area, and does not include common roadway/infrastructure rights-of-way and open space requirements.

As part of the examination of the project components and determination of footprint size requirements as presented in Table 5.4-1, general planning guidelines for the type of building and number of parking spaces for each of the project components and associated uses were researched and established. In New Jersey, development requirements such as height restrictions, open space, parking spaces, and maximum impervious coverage are typically predicated on municipal zoning and related ordinances. In the HMD, zoning and related ordinances are under authority of the NJMC. An inventory was also conducted of successfully operating projects as a reflection of regional characteristics in addition to those stipulated solely by zoning regulations.

To develop a mixed-use commercial development design and general project footprint for the off-site alternatives analysis for this project, municipal ordinances and NJMC zoning rules were studied to determine their requirements for an area zoned for regional retail, shopping center, hotel, and office complexes. Several guidelines were developed based on the northern New Jersey zoning requirements reviewed to provide guidance for the analysis of each project component of the general "off-site" mixed-use commercial development design. These general guidelines also took into account the economic viability and market requirements for each project component. Similar to the analysis of representative parking configurations, an inventory was conducted of successfully operating commercial projects. In this way, actual regional characteristics would be used in addition to those stipulated solely by zoning regulations. An overview of the guidelines developed to analyze typical requirements is detailed below.

Super-Regional Retail/Entertainment Center

The Mills Corporation typically constructs retail/entertainment centers as a one-story building with two-story ceiling heights containing 15 to 20 anchor stores and several hundred specialty stores. However, two-story versions of such facilities are not uncommon, especially where space is scarce. Parking for automobiles and buses is often provided at grade around the Center. However, multi-level parking is also not uncommon, especially in combination with multi-story retail centers. The parking space ratio was set at 5.0 per 1,000 SF of building area. To determine the acreage of the parking spaces, an average of 125 spaces per acre was used. The 125 spaces per acre configuration is based upon 90-degree parking stalls with a 60-foot bay width (stalls at 9 ft. x 18 ft., with 24' aisle).

Office Space

Office space is typically set in multi-story buildings. The height of the office building was selected at 75 ft (i.e., four stories) since this represents a maximum height restriction set in many ordinances and also typically avoids High Rise Building Code Requirements. Parking for office space is frequently provided at grade, although two-level parking is not uncommon. The parking space ratio was set at 3 per 1,000 SF of office space.

Hotel/Conference Center

These facilities typically consist of a multi-story building, which includes guest rooms, conference facilities and restaurants. A typical building height of four stories was selected similar to the Office Space component, as noted above. The parking space ratio for the Center was set at two spaces per room, with provisions for a four-story parking structure adjacent to the hotel as would be typical for such a development.

Warehouse/Distribution

These facilities typically provide warehouse support to a Super-Regional Retail/Entertainment Center. The facility size was set at 10% of the center size, as would typically be expected for such a facility, with parking requirements set at 1 space per 1,500 SF of building.

Mass-Transit Facility

The footprint of this type of facility was set at 1 acre, based on comparisons with other similar facilities.

Project Component Integration into a Generic Mixed-Use Commercial Development

With the basic project footprint area calculated for each project component as presented in Table 5.4-1, the footprint acreage for a general mixed-use commercial development was calculated. Besides each of the project components, the mixed-use commercial development would require "common" items such as roadways, infrastructure rights-of-way, and open space. In addition, the mixed-use concept also would facilitate a reduction in the parking space area as a result of shared parking opportunities. Table 5.4-2 summarizes USACE's calculation of a generic mixed-use commercial development design footprint with these factors incorporated into the general design.

Table 5.4-2
General Mixed-Use Commercial Development
Minimum Design Acreage for Off-Site Alternatives Analysis

Project Component	Project Component Size	Basic Component Footprint Area (see Table 5.4-1 for details)
Super-Regional Retail/Entertainment Center	1.5-2.5 million SF with 7,500-12,500 parking spaces	62-103.5 acres
Hotel/Conference Center	500,000-700,000 SF with 1,400-2,000 parking spaces	8-11 acres
Office Space	1.5-2.5 million SF with 4,500-7,500 parking spaces	36-59 acres
Warehouse/Distribution	150,000-250,000 SF with employee parking and loading bays	5-8 acres
Mass-Transit Facility	Bus Terminal and Parking	1 acre
<i>Project Component Subtotal</i>		<i>112—182.5 acres</i>
For Mixed-Use Design, add area for Common Roadways/Infrastructure Rights-of-Way/Service Areas		Add 23-38 acres
For Mixed-Use Design, subtract area for Shared Parking (20% net reduction in total of Parking Area Footprint from Table 5.3-1)		Subtract 20-33 acres
<i>General Mixed-Use Design Footprint Subtotal</i>		<i>115—187.5 acres</i>
For Mixed-Use Design, add area for Open Space requirement (15% of Project Component Subtotal)		16.8 —27.4 acres
GENERAL MIXED-USE COMMERCIAL DEVELOPMENT DESIGN FOOTPRINT		132 - 215 acres (acreage totals rounded to nearest whole number)
Source: USACE, 1998.		

The Project Component Subtotal for the basic footprint of the buildings and parking area for the five components is 112 to 182.5 acres (Table 5.4-2). A 20% gain in the Project Component Subtotal was added for common areas including roadways, infrastructure rights-of-way, and service areas. Shared parking between retail and office space generally allows for a reduction of 1 to 2 parking spaces per 1,000 SF, realizing a 12 to 25% net reduction in overall parking space requirements. A 20% net reduction in the total Parking Area Footprint was calculated to account for the effects of shared parking and captive market. The additional acreage for roadways and infrastructure, in combination with the reduction in acreage resulting from efficiencies in shared parking, translated into a combined acreage of 3 to 5 acres in addition to the Project Component Subtotal.

A 15% gain in the total mixed-use design footprint was added for open space requirements. Open space requirements vary among municipalities in the region, ranging from less than 20 to 80%. While regulations require open space ratios in this range, these percentages do not account

for inclusion of other project components (such as landscaping, storm water detention facilities, buffers, and setbacks) in the open space ratio, as they only specify the open space ratio itself. Inclusion of such site features into the required open space component of the site is a common practice in actual site development in the region. As a reflection of regional site development characteristics, integration of other project components such as detention basins and landscaping into the open space component of a site also would be applied by the applicant in the design of the proposed project for the Empire Tract.

Considering the above, 15% was chosen for purposes of this analysis as a lowered estimate. Using these guidelines, the minimum design acreage range General Mixed-Use Commercial Development Design Footprint was determined to be 132 to 215 acres. Higher open space percentages, storm water detention facilities, buffers, and setbacks would require minimum design acreage to increase.

Based upon the five project components in a mixed-use commercial development, a generic concept "footprint" reflecting the typical components and adjustments was used for examination of off-site alternative sites within the defined northeastern New Jersey area. This footprint coverage incorporates a mixed-use concept with interrelation of the project components, and was used as a generic footprint for the evaluation of alternative sites

5.4.3.3 Calculation of Minimum Parcel Size

To establish a minimum parcel size for consideration of off-site alternatives, the low end of the minimum design acreage range for the project components presented in Table 5.4-2 was selected. This conservative number was chosen to ensure that all appropriate off-site alternatives, down to the minimum size, would be analyzed. A mixed-use commercial development minimum design footprint of 132 acres, therefore, was considered a minimum parcel size based upon the analysis presented above. A smaller parcel size of 115 acres was used as a basis for the off-site alternatives analysis, in order to be conservative (see 5.4.4.1). The identification and analysis of alternative sites is provided in the following sections.

5.4.4 Analysis of Potential Alternative Sites

5.4.4.1 Introduction

The identification of potential off-site alternatives analysis was based on three studies commissioned by the applicant. The first study (Cascino Engineering 1992), was prepared for the study of alternative locations to the Meadowlands Mills Town Center previously proposed by Empire, Ltd. (See Section 5.5.1). At the request of USACE and as a result of comments received, the applicant prepared a supplement to this report '*Supplement to an Evaluation of the Development Potential of Non-Owned Practicable Alternative Sites*', (Cascino Engineering 2001). The third study assessed those sites identified in the Cascino study against the applicant's generic market criteria used to assess the economic viability of a proposed location. These reports provide the basis for the alternatives analysis presented in this FEIS.

For analysis purposes, the Cascino study as supplemented (2001) considered a 115-acre minimum size scenario for the study of alternative sites. This parcel size had been identified in

the 1992 study as the minimum size parcel that could accommodate the commercial and office components of the project, without required infrastructure. Using a minimum parcel size of 115 acres, the Cascino study (2001) identified all undeveloped and redevelopable parcels of land within the 804-sq-mile study area (comprising 151 municipalities) that could provide potential off-site alternatives to the proposed project. The study also identified 555 brownfield sites within the geographic region and further evaluated 5 of these sites that met the minimum acreage criteria. Parcels of land smaller than 115 acres that could be utilized in conjunction with adjacent parcels were also evaluated. A total of 103 sites were evaluated, including a number of sites that were outside the defined six-county study area, but which were proposed by commenters during the public review period for the DEIS. All sites evaluated are listed in Table 5.4-3. The study area for the off-site alternatives analysis is shown on Figure 5.4-1. The third Cascino study evaluated each site against several market criteria (see Section 5.4.4.2).

Using information from United States Geological Survey (USGS) maps, National Wetland Inventory Maps, municipal tax maps and tax lists, zoning maps and zoning regulations, the applicant collected information on the physical, regulatory, environmental, logistical and economic characteristics of potential off-site alternatives. (Details of some characteristics that were evaluated for individual sites are shown in Table 5.4-3.) Based on this information the Cascino study included a preliminary determination as to whether each site was either 'practicable' or 'available' as a viable alternative to the proposed project (see Section 5.1.1).

5.4.4.2 *Analysis Methodology*

Following the completion of the Cascino and market criteria studies (2001), USACE evaluated the information provided on site characteristics of each potential alternative site using a tiered approach.

Building on the evaluation of alternatives presented in the DEIS, the tiered analysis prioritizes physical constraints over regulatory constraints, and regulatory constraints over economic and logistical constraints in evaluating the sites. This method ranks the alternatives analysis in favor of environmental and physical criteria, and places less emphasis on market viability and logistical criteria. The tiered analysis method and presentation of the data in a table was used for the FEIS to provide a more comprehensive, focused approach to the analysis of potential off-site alternatives. This approach, similar to that used in the Alternatives Analysis for the SAMP for the NJMC (EPA 1995), allows for a focused analysis, in which characteristics of individual sites can be evaluated in terms of suitability for the development of the proposed project.

Three tiers of analysis were used to evaluate alternative sites. Tier 1 comprised physical constraints, which, if present on a site, would eliminate that site from further evaluation. These criteria consisted of the following:

- **Topography:**
Extreme topography (mountainous or steeply sloping sites) would make the development of the site for the project purpose and need impracticable on economic, environmental or logistical grounds.

POTENTIAL OFFSITE ALTERNATIVE LOCATIONS CONSIDERED FOR MEADOWLANDS MILLS

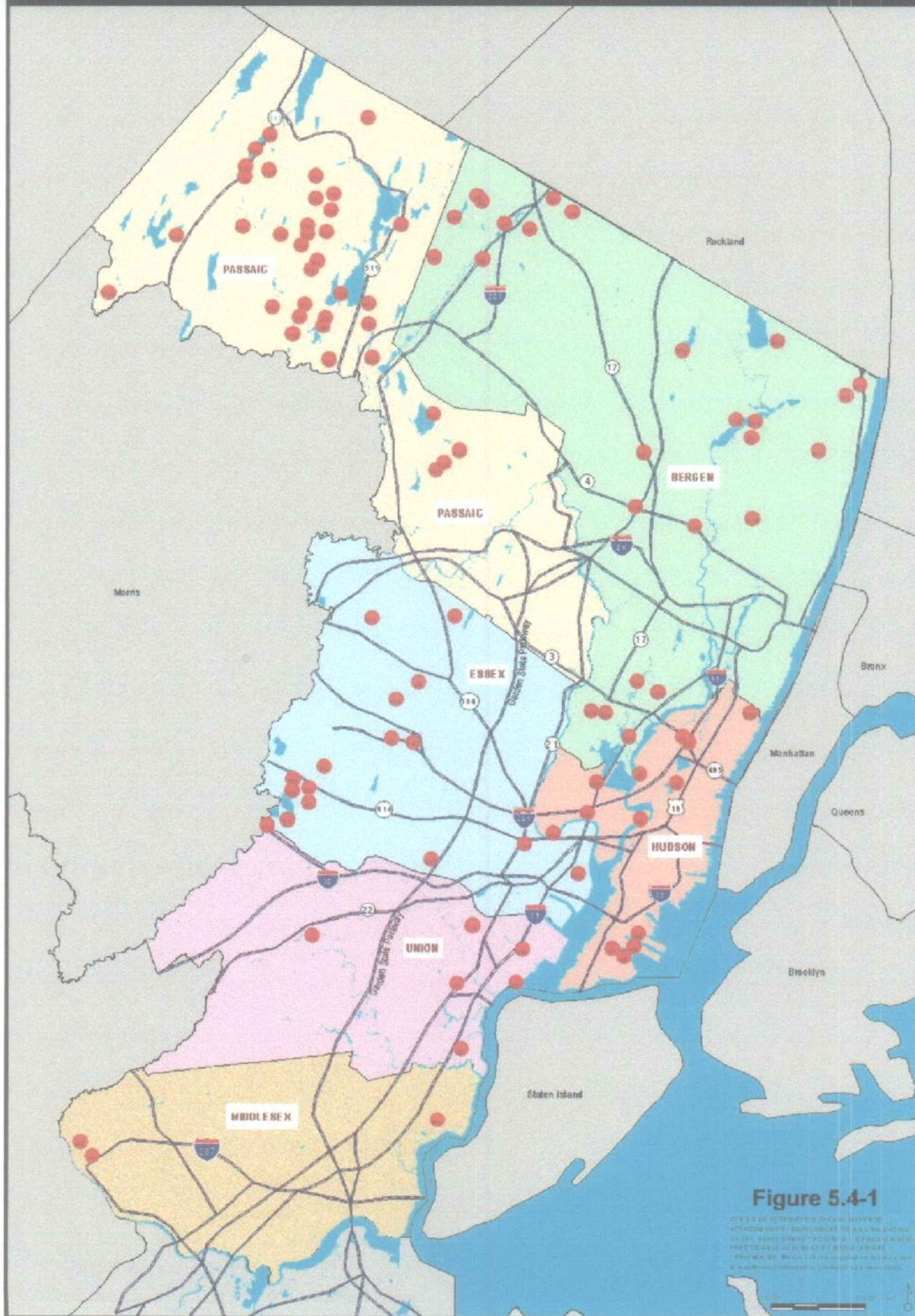


Figure 5.4-1

POTENTIAL OFFSITE ALTERNATIVE LOCATIONS CONSIDERED FOR MEADOWLANDS MILLS. THIS MAP IS A GENERAL REPRESENTATION OF THE POTENTIAL LOCATIONS AND DOES NOT CONSTITUTE A GUARANTEE OF THE ACCURACY OF THE INFORMATION. THE INFORMATION IS FOR INFORMATIONAL PURPOSES ONLY AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE. THE INFORMATION IS NOT A GUARANTEE OF THE ACCURACY OF THE INFORMATION. THE INFORMATION IS FOR INFORMATIONAL PURPOSES ONLY AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

**Table 5.4-3
Summary of Potential Alternative Sites of 115 Acres or More**

SITE INFORMATION					CRITERIA															COMMENTS			
					TIER 1					TIER 2					TIER 3								
					Physical					Regulatory/ Environmental					Logistical/ Economic								
	SITE NAME & NUMBER	Owner	Block/Lot	Size (acres)	Extreme Topography	Reservoir/Watershed/ Open Water (Lake, river etc.)	<115+ acres	Availability as Absolute Constraint	Practicable Alternative	Zoning Conflict	Zoning Type	Contamination	Wetlands	Practicable Alternative	Proximity to Competition	Surrounding Land Use	Availability as potential constraint	Population Density	Proximity to Lane Road	4-	Practicable Alternative	Applicant Reason for Rejection	Comments
1	B1 E.Rutherford	HJ Sisselman	108b/39	146					YES				X	NO								Not Avail	Part of site is now wetand mitigation bank
2	B2 Haworth	Hackensack Water Co	100	394		261			NO	X					X	Rec/park			X			Not Pract	
3	B3 Mahwah	Ramapo Ridge	70/1A	145				X	NO													Not Avail	Subdivided and sold for dev
4	B4 Mahwah	Est of HL Pierson	88/1	928	X			X	NO													Not Avail	Sold to NJ for Parkland
5	B5 Mahwah	McGeordeev Assoc.	88/47	178				X	NO													Not Avail	Sold to Bergen Ct for parkland
6	B6 Mahwah	Frank Dator	88/52CQ	226				X	NO													Not Avail	Sold to Mahwah for Parkland
7	B7 Mahwah	Isaac Degenaars	88/54	146				X	NO													Not Avail	Sold to Bergen Ct for parkland
8	B8 Mahwah	Frank Dator	88/58CQ	290				X	NO													Not Avail	Sold to Bergen Ct for parkland
9	B9 Mahwah	Fred Wehran	88	151	X				NO	X	C-80		13			Parkland			X			Not Pract	
10	B10 Old Tappan	Hackensack Water Co	2901	924		821			NO	X						Cons/Res			X			Not Pract	
11	B11 Closter	Hackensack Water Co	201/6	284		284			NO	X	R					Watershed Cons & Res			X			Not Pract	Oradell Res
12	B12 Emerson	United Water NJ	1301/3-5	126		126			NO	X	Office					Watershed Cons			X			Not Pract	Oradell Res
13	B13 Mahwah	Boy Scouts of America	1/61.	184	X	14			NO	X						Con & Res		X				Not Pract	No access, woodland around
14	B14 Mahwah	Essex Council BSA	1/various	574	X	20			NO	X						Cons & Res			X			Not Pract	
15	B15 Woodcliff	United Water NJ	2301/1	134		134			NO							Res			X			Not Pract	Woodcliff Lake Watershed
16	B16 Paramus	Arcola Country Club	1102/13	>115				X	NO													Not Avail	Developed as active golf course
17	B17 Alpine	Montammy GC	11/2	>115				X	NO													Not Avail	Developed as active golf course
18	B18 River Edge	Edgewood CC	1201/6	>115				X	NO													Not Avail	Developed as active golf course
19	B19 Bergernfield	Knickerbocker CC	258/1	>115				X	NO													Not Avail	Developed as active golf course
20	B20 Demarest	Alpine CC	120/13	>115				X	NO													Not Avail	Developed as active golf course
21	B21 Paramus	Ridgewood CC	3101/2	>115				X	NO													Not Avail	Developed as active golf course
22	B22 Alpine	Camp Alpine	120/3	542	X				NO	X	RA		5f			Camp & Res		X				Not Pract	
23	B23 E Rutherford	NJ Sports Authority	107.02/1	67			X		NO													Not Avail/ Not Pract	Site may be available soon; available acreage could increase (see Section 5.4.4.4)
24	B24 Lyndhurst	Lyndhurst/HMDC Landfill	233/10,11,15	125		125?			NO	X		X			X				X			Not Pract	Part already agreed for redevelopment
25	B25 Lyndhurst	Avon/HMDC Landfill	233,731	100			X		NO	X	H	X	5f		X				X			Not Pract	Part already agreed for redevelopment
26	B26 Lyndhurst	Kingsland/HMDC Landfill	236/1	195					YES	X	H, P	X	9f	NO								Not Pract	Part already agreed for redevelopment
27	E1 Cedar Grove	Newark	231-2, 240, 250, 260-1	167		119			NO	X	R-18					Park & Res			X			Not Pract	
28	E2 Livingston	East Orange	244/7	181		143			NO	X						Park & Res			X			Not Pract	
29	E3 Livingston	Commonwealth/NJ Water Co	6001/132-4	173		109			NO	X	Cons					Watershed Cons & Park			X			Not Pract	
30	E4 Livingston	East Orange	291	302					YES	X	R1		143f	NO	X	Res			X	X		Not Pract	
31	E5 Livingston	East Orange	292/various	413					YES	X	R1		300f	NO	X	Res			X			Not Pract	In watershed of Canoe Brook Res
32	E6 Livingston	East Orange	293/various	444					NO	X	R1		289f		X	Rec & Res		X	X			Not Pract	In watershed of Canoe Brook Res
33	E7 Milburn	East Orange	5401,3,4/1	633		253			NO	X	Cons				X	Rec & Res		X	X			Not Pract	In watershed of Canoe Brook Res
34	E8 West Orange	Robert Kean	170/var	132.5				X	NO								X					Not Avail	Most sold for dev, rest too small
35	E9 West Orange	W Essex Highlands Corp	178/9	186		X			NO	X	R2, RC				X	Res & Rec						Not Pract	Zoning Conflict principal reason
*36	E10 Livingston	Cedar Hill CC	6001/75	>115				X	NO													Not Avail	Developed as active golf course
37	E11 West Caldwell	Mt Ridge CC	1402/15	>115				X	NO													Not Avail	Developed as active golf course
38	E12 West Orange	Essex County CC	156/1	>115				X	NO													Not Avail	Developed as active golf course
39	E13 West Orange	Montclair CC	151/1	>115				X	NO													Not Avail	Developed as active golf course
40	E14 West orange	Crestmont CC	174/1	>115				X	NO													Not Avail	Developed as active golf course
41	E15 Short Hills	Canoe Brook CC	5304/1	>115				X	NO													Not Avail	Developed as active golf course
42	H1 Bayonne	PSE&G	412/6	215		131			NO	X	HI		30t		X	Petroleum tank farm			X			Not Pract	Open Water =Tidal wetlands/Hudson River
43	H2 Kearny	Koppers Co	287/var	156				X	NO														Sold to Hudson Ct Imp Auth for public purpose
44	H3 Secaucus	Hartz Mt Dev	185/2	267				X	NO								X					Not Avail	Sold to Hackensack Meadowlands Comm for March Pres
45	H4 Secaucus	EE Mori	227/9	134		X			NO	X	C, I		88t		X				X			Not Pract	Wetlands drain into Eastern Brackish Marsh (part of HMDC mitigation project). If insufficient upland is available due to current development of site into retail center site is too small to develop without indirect impacts on high-value adjacent wetlands.
46	H5 Jersey City	NY/NJ Port Authority	1507/25	131		80			NO	X	HI				X	Ind, Greenville Railyard			X			Not Pract	Would require filling 80acres of Hudson River
47	H6 Bayonne	OENJ Cherokee Bayonne	412/501	156		51			YES	X	HI			YES	X	Petroleum tank farm			X	NO		Not Pract	Access would require construction of new exit off NJ Turnpike, through residential area. If this is not logistically or economically feasible site is not practicable.

Table 5.4-3 (Continued)
Summary of Potential Alternative Sites of 115 Acres or More

SITE INFORMATION					CRITERIA														COMMENTS			
					TIER 1					TIER 2					TIER 3							
					Physical					Regulatory/ Environmental					Logistical/ Economic							
	SITE NAME & NUMBER	Owner	Block/Lot	Size (acres)	Extreme Topography	Reservoir/Watershed/ Open Water (Lake, river etc.)	<115+ acres	Availability as Absolute Constraint	Practicable Alternative	Zoning Conflict	Zoning Type	Contamination	Wetlands	Practicable Alternative	Proximity to Competition	Surrounding Land Use	Availability as potential constraint	Population Density	Proximity to Lane Road	Practicable Alternative	Applicant Reason for Rejection	Comments
48	H7 Secaucus	HUB Expo Dev	5/ 3&5	60			60		NO				n/a		X						Not Pract	Hub Exo site (60 acres) is part of Laurel Hill Redevelopment Area (265 acres). Plan provides for 38 acres for mixed use development. 97acres already committed to Convention Center, to be developed by Hub Expo. 130 acres are planned for a communications/production center. Assuming these plans cannot be altered, site is not practicable.
49	H8 Jersey City	Talerico	Various	99			X		NO	X	PU		80f			Ind, warehouse,					Not Pract	Referred in Comment A USACE 12/1/00 letter - Talerico Site in Jersey City; also 10/11/00 report- Envrionmental Commentators
50	H9 Bayonne	U.S. Government	123-124/404	700					YES	X	LI	X		*	X	Heavy Industry	X	X		*	Not Pract/Avail	*Pursuant to information arriving during publication of the FEIS, USACE will further consider this alternative.
51	H10 Harrison	PSE&G	143,78/7A1	70.5		3	70		NO						X						Not Pract	Zoning, too small
52	H11 Kearny	Kearny Town	205/various	120					YES	X	LI	X	32f	NO	X	Kearny Marsh					Not Pract	Zoning, contamination, developer selected
53	M1 Piscataway	Union Carbide	421/var	154					YES	X	M5, LI5		33	YES		Sewage Plant			X	NO	Not Pract	Surrounding land use incompatible with proposed project- site is located adjacent to a sewage plant..
54	M2 Piscataway	Louis Sudzin	502/var	120				X	NO								X				Not Avail	Subdivided and sold for dev
55	M3 Woodbridge	Port Reading	1095/various	218					YES	X	LI, M		60f	YES	X	Petroleum Tank Farm			X	NO	Not Pract	Zoning, access, land use. Referred in Coment A USACE 12/1/00 letter -Port Reading Property; also 10/11/00 report- Environmental Commentators
56	M4 Sayerville	Nat Lead Co?		75		X			NO												Not Pract	Too small,outside study area
57	M5 Sayerville	Hercules		70		X			NO												Not Pract	Too small,outside study area
58	M6 Sayerville	Talerico		98			X		NO			X									Not Pract	Referred in Comment A USACE 12/1/00 letter, Talerico site in Sayerville. Too small,outside study area
59	P1 Bloomingdale	NJ Dist Water Supply	2,/34	223	X	10			NO	X						Watershed Cons		X	X		Not Pract	
60	P2 Bloomingdale	Kampfe Lake Assoc	3,4/	274	X	40			NO	X	R130					Res		X	X		Not Pract	
61	P3 Bloomingdale	Bloomingdale Hill	60/60,60a	125	X			X	NO	X									X		Not Avail	Sold to NJ for parkland
62	P4 Bloomingdale	Meer Estates	60/var	173	X	10			NO	X	R9 clus					Res		X	X		Not Pract	
63	P5 Bloomingdale	Lake Isoco	49/various	277	X	85			NO	X	RR3					Res		X	X		Not Pract	
64	P6 Bloomingdale	Lake Isoco	4,/2	166				X	NO												Not Avail	Sold to NJ for parkland
65	P8 Ringwood	Cobb Heirs/Saddle Mtn	101/26	257	X				NO	X	R- 40V		1			Res		X	X		Not Pract	
66	P9 Ringwood	I,Z Realty	205-7/1,3	126				X	NO												Not Avail	Lots sold for dev
67	P10 Ringwood	Irving SL Assoc/Poultry Inc.	201/31	310	X				NO	X	R- 40V		3f			Res		X	X		Not Pract	
68	P11 Ringwood	McKee/Levkovitz	200/17	164	X				NO	X	R- 40V					Res		X	X		Not Pract	
69	P12 Ringwood	Sterling Forest	400/7	1300				X	NO												Not Avail	Sold to Passaic Ct for parkland
70	P13 Ringwood	NJ Dist Water Supply	Various	4532	X	2000			NO	X						Cons & Res		X	X		Not Pract	Wanaque reservoir and watershed
71	P14 Wanaque	Powder Hollow Assoc	313/1,8	483	Xpart	60			NO	X	I, R, W					Rec & Res		X	X		Not Pract	Surrounding Land use incompatible. Flat area of site does not contain 115 acres of contiguous upland so would require filling of 60 acres. Assuming variance could not be obtained site is not practicable
72	P15 Wanaque	EI Dupont	479/various	265	Xpart	55			NO	X	I,R40, W					Res & Rec		X	X		Not Pract	Surrounding land use and zoning conflict
73	P17 Wayne	Urban Farms	602/var	197				X	NO												Not Avail	Sold to NJDEP,Wayne as parkland
74	P19 W. Milford	Up Greenwood Lake Owners	164/1,2	503		503			NO	X	R								X	X	Not Pract	Almost all open water
75	P20 W Milford	Lake Hill Estate	333,334/var	1265				X	NO	X	Ag/R4 ?										Not Avail	Sold to NJDEP as parkland
76	P21 W Milford	Newark	274/79	315	X	1			NO	X	R4					Res & Lake		X	X		Not Pract	In Clinton Res watershed
77	P22 W Milford	Newark	390/19	562	X	19			NO	X	Ag/R4					Res & Lake		X	X		Not Pract	In Clinton Res watershed
78	P23 W Milford	Pinecliff Lake	415/1,2,2a	151		151			NO							Res & Lake		X	X		Not Pract	Pinecliff Lake - all open water
79	P24 W Milford	Newark	Various	15078	X				NO	X	R4					Res & Lake		X	X		Not Pract	In Clinton Res watershed
80	P25 W Milford	P Kooistra	474/var	164				X	NO												Not Avail	Sold to W. Milford for parkland
81	P26 W Milford	Cobb Heirs/Saddle Mtn	489/4	122	X	2			NO							Res		X	X		Not Pract	
82	P27 W Milford	Wueste/Apello	11401/31	127	X	127			NO							Cons & Agric.		X	X		Not Pract	
83	P28 Wanaque	NJ Dist Water Supply	500/1	1655		1655			NO							Cons		X	X		Not Pract	
84	P29 Wayne	Pine Lakes Assoc	4313/1	133		133			NO							Res		X	X		Not Pract	
85	P30 Wayne	Passaic Valley Water Co	3703/27	445		445			NO							Cons, Res, LI		X	X		Not Pract	
86	P31 West Milford	Dell Contractors	4701/49	115	X		X		NO				20f			Res		X	X		Not Pract	Zoning conflict, topog
87	P32 W Milford	J & S Levkovitz	4701/61	126	X				NO				3f			Res		X	X		Not Pract	Zoning conflict, topog
88	P33 W Milford	J ames Schwartz	5001/27	143	Xpart				NO	X	R3		20f			Res & Lake		X	X		Not Pract	Surrounding land use, steep
*89	P34 w Milford	Chertacojo	7702/4	221	Xpart				YES	X	R4, R1		110f	NO		Res, lake, rec		X	X		Not Pract	Zoning conflict, wooded, steep in parts

Table 5.4-3 (Continued)
Summary of Potential Alternative Sites of 115 Acres or More

SITE INFORMATION					CRITERIA											COMMENTS						
					TIER 1				TIER 2				TIER 3									
					Physical				Regulatory/ Environmental				Logistical/ Economic									
	SITE NAME & NUMBER	Owner	Block/Lot	Size (acres)	Extreme Topography	Reservoir/Watershed/ Open Water (Lake, river etc.)	<115+ acres	Availability as Absolute Constraint	Practicable Alternative	Zoning Conflict	Zoning Type	Contamination	Wetlands	Practicable Alternative	Proximity to Competition	Surrounding Land Use	Availability as potential constraint	Population Density	Proximity to Lane Road	Practicable Alternative	Applicant Reason for Rejection	Comments
*90	P35 W Milford	Lake Arcadia Assoc	12501/11	432					YES	X	R3		130	NO		Park, Rec, Lake		X	X		Not Pract	Zoning conflict, wooded, steep in parts
91	P36 Bloomingdale	Salvation Army	5/26	280	X	40			NO	X	HI					Rec, camp, res			X		Not Pract	Zoning for camps, steep
*92	P37 Wayne	Preakness Hill CC	2205/99	>115				X	NO								X				Not avail	Developed as active golf course
*93	P38 Wayne	North Jersey CC	3100/3	>115				X	NO								X				Not Avail	Developed as active golf course
94	U2 Elizabeth	American Export	1/169A	120	X	100			NO				X		X	Open Water					Not Pract	Island in NY Harbor, no access, open water
95	U3 Linden	EI Dupont	586/11	126					YES	X	HI		58	NO	X	Heavy Ind			X		Not Pract	Zoning conflict, wetland fill
96	U4 Westfield	Echo Lake CC	1601/2	>115				X	NO								X				Not Avail	Developed as active golf course
97	U5 Elizabeth	No Aven/Continental Airline	1/various	177				X	NO												Not Avail	Not available, proposed for development by owner (Cont Air). Referred to in USACE 12/1/00 letter North Avenue East in Elizabeth, also in 10/11/00 Report Environmental Commentators
*98	U6 Linden	ISP9 Corp	5877/1	121					YES	X	HI	X	4f	NO		Heavy Ind, sewage plant				NO	Not pract	Surrounding land use impractical
99	BR1 Kearny	HMDC 1C Landfill	149/10	211		10			YES	X	Park/ Rec	X		NO	X						Not Pract	
100	BR2 N Bergen	N Hudson Park	437/1	167				X	NO											NO	Not Avail	Developed as a park
*101	BR3 Newark	Newark	5078,1/20	167					YES	X	HI	X		NO	X	Heavy Ind			X		Not Pract	
102	BR4 Pompton Lakes	EI Dupont	100/3	297	Xpart	10			NO	X	M, LI, Off	X							X	NO	Not Pract	Zoning conflict, surrounding land use
103	BR5 Elizabeth	NJ Metro Mall Urban Renewal	1/1380	127				X	NO												Not Avail	Site developed as Jersey Gardens Mall

NOTES:

Site Number e.g. E2 = Site Data Sheet References taken from Cascino Reports (1992, 2001)

Zoning

R = Residential
HI = Heavy Industrial
LI = Light Industrial
H= HMDC Golf Course Redvp. Plan,
PU =Public Utility
P=Park/Marsh Pres,
W=Warehousing
C=Commercial

Other Codes

f=freshwater
t=tidal
op=open water
Rec = Recreational
Cons= Conservation
Res = Residential
Avail = Available
Pract = Practicable
dev = development

- **Reservoir, Watershed or Water Body:**
The presence of a significant reservoir, water body or a designated water supply watershed would not allow development of the proposed project without significant environmental impacts or logistical or economic constraints. The presence of these features would essentially prohibit development.
- **Size:**
Sites that did not meet the minimum area requirement of 115 acres (the minimum area required for the project excluding infrastructure, as described in 5.4.4.1), and which did not have any available or practicable contiguous land parcels which could be used to achieve a parcel size of 115 acres were removed from consideration.
- **Availability:**
Sites were identified where availability is an absolute constraint to development. Where it was evident that this constraint applied, such sites were not evaluated further. Such sites included sites that are already developed as active golf courses or have been dedicated as parkland.

Tier 2 comprised regulatory and environmental criteria that, while not absolute physical constraints, presented severe limitations to the suitability of the site as a practicable alternative. USACE considers the following as Tier 2 criteria:

- **Zoning:**
Sites affected by zoning regulations, as enacted by the relevant municipality and/or zoning authority, that would not permit the construction of a mixed-use development, including a hotel, offices and retail and entertainment center at density comparable to that proposed by the applicant. This criterion included sites where the zoning was such that obtaining a variance for commercial or mixed-use development was not considered to be feasible, including sites zoned for low density rural residential uses and sites zoned for heavy industrial use. Assuming that a zoning variance was not feasible, development of the proposed project on such sites was considered impracticable.
- **Contamination:**
Sites affected by levels of soil or groundwater contamination that would preclude the construction of the proposed project on environmental, logistical, or economic grounds. Assuming that remediation of such a site would not be feasible within a reasonable time frame or cost, development of the proposed project on such sites would be impracticable.
- **Wetlands:**
Where impacts to wetlands on the site being considered would be similar to or greater than the impacts to wetlands on the Empire Tract from the proposed project, development of the proposed project on the site was considered impracticable.

Tier 3 consisted of logistical and/or economic constraints, which while not severe physical, regulatory or environmental constraints limit the suitability of a site as a practicable alternative. Such parameters include site availability, population density, household income, proximity to competition, proximity to major highways, surrounding land use, and logistical issues such as access. These constraints also included market viability criteria based on marketing and development parameters of The Mills Corporation, as follows:

- **Availability:**
Sites that are not available for purchase as a result of economic or logistical factors. The analysis differentiates between sites that are not physically available, and sites where property ownership, existing development or other factors may render the site unavailable.
- **Proximity to a Major Highway:**
Sites where construction of a mixed-use development such as the proposed project may not be economically viable due to the site being located more than 0.5 mile from a major 4-lane roadway.
- **Surrounding Land Use:**
Sites where the surrounding land-use is such that the construction of a mixed-use development (such as the proposed project) would be logistically, economically and environmentally impracticable. This includes sites in predominantly heavy industrial areas and sites located next to conflicting and incompatible land uses such as sewage plants, petroleum facilities or other incompatible industrial facilities. Such sites generally have an incompatible zoning restriction, and are limited in their capacity to attract prospective retail and hotel tenants and office lessees.
- **Population Density:**
Sites where the surrounding population within 10 miles of the site is less than 300,000 people. The construction of a mixed-use development would not be economically viable on such sites. Of the 103 alternative sites evaluated, only 36 sites, 27 of which were located in Passaic County, did not meet the population density criteria.
- **Proximity to Competition:**
Sites where construction of a mixed-use development such as the proposed project may not be economically viable due to the presence in the immediate vicinity (within 7 miles or less) of a regional shopping center, or the presence in the nearby vicinity (within 15 miles or less) of a Class A retail center. Of the 103 alternative sites evaluated, only 22 sites did not meet the proximity to competition criteria. With all 22 sites, this criterion was not the primary reason for considering use of a site to be impractical.
- **Household Income:**
Sites where median household income is less than 10% over the national average. All sites evaluated in the alternatives analysis meet this household income requirement, as does the entire six-county area.

The off-site alternatives analysis comprised a detailed evaluation of each potential alternative site against a range of criteria grouped within three consecutive tiers (Section 5.4.4.2). Each site was evaluated against these criteria within each of the three tiers in turn, and either eliminated from the analysis as a practicable alternative or evaluated further in the next tier.

5.4.4.3 Findings of Off-Site Alternatives Analysis

Table 5.4-3 summarizes results of the off-site alternatives analysis. All criteria evaluated for alternative sites within all tiers are presented within the table, even in cases where sites may have been rejected within Tier 1 or Tier 2. No sites were rejected solely on the basis of the applicant's marketing criteria.

5.4.4.3.1 Tier 1

The evaluation of the 103 off-site alternatives against the criteria in Tier 1, which comprised absolute physical constraints, resulted in the elimination of the majority of the sites from the analysis (see Table 5.4-3). All of these sites were found to have absolute physical constraints, such as extreme topography, insufficient size, lack of availability, or the presence of a reservoir, watershed or major water body, which would mean that the construction of the proposed project would be precluded on environmental, logistical or economic grounds, or would result in greater adverse environmental impacts than would be incurred by the development of the proposed project on the Empire Tract. All of the sites with Tier 1 constraints were also constrained by some or all of the factors evaluated in Tiers 2 and 3.

5.4.4.3.2 Tier 2

Comparison of sites against Tier 2 criteria resulted in elimination of additional sites from the analysis (see Table 5.4-3). All of these additional sites were found to have a combination of severe regulatory and/or environmental constraints, such as extreme zoning conflicts, contamination, or wetland acreage. These factors indicate that the construction of the proposed project would be impractical on environmental, logistical or economic grounds, or would result in greater adverse environmental impacts than would be incurred by the development of the proposed project on the Empire Tract. No sites were eliminated or retained on the basis of presence or absence of wetlands; this criterion was applied quantitatively in order to assess whether wetland impacts on the alternative site would be similar to or greater than those that would be expected to occur if the project were to be developed on the Empire Tract. Likewise, no sites were excluded solely on the basis of zoning. All sites where zoning was a limitation were also limited by other constraints within Tiers 1 and 2. All of the sites eliminated on the basis of Tier 2 constraints were also constrained by some or all of the factors evaluated in Tier 3. Six sites evaluated in Tier 1 and/or Tier 2 could not be initially eliminated as practicable alternatives due to uncertainty of contamination issues and/or site availability. USACE requested additional information from local redevelopment agencies regarding these sites. Information was requested on the following sites:

- Site 50, Bayonne H9: Former Military Ocean Terminal at Bayonne;
- Site 97, Elizabeth U5: 290 North Avenue East/Continental;
- Site 98, Linden U6: ISP Environmental Services Inc.;
- Site 99, Kearny BR1: NJMC 1E Landfill;
- Site 101, Newark BR3: Newark; and
- Site 102, Pompton Lakes BR4: EI Dupont.

Regarding these sites, no response was received on Sites 101 and 102, and USACE has no further information on their availability or contamination issues at this time. Responses received on those sites for which information was requested are summarized below.

Site 50, Bayonne H9: Former Military Ocean Terminal at Bayonne: The Bayonne Local Redevelopment Authority indicated that in its opinion, the subject site could accommodate the logistical features necessary to support a large-scale mixed-use development. The Redevelopment Authority indicated that a Request for Proposal was recently issued for development of a portion of the site, named the Loft District. On May 2, 2002 the applicant submitted analysis indicating that this site remains impracticable as an alternative. This submission from the applicant is currently under USACE review. USACE seeks additional information to assess whether this site should be considered a practicable alternative that could be developed within a reasonable time frame.

Site 97, Elizabeth U5: 290 North Avenue East/Continental: In response to USACE's letter, the City of Elizabeth expressed its support for commercial development of the site and referred USACE to the corporate real estate division of Continental Airlines for further information. No additional detailed information has been obtained at this time. In the absence of additional information that would indicate this site to be potentially suitable and available for redevelopment, this site will be eliminated from further consideration.

Site 98, Linden U6: ISP Environmental Services Inc.: According to the City of Linden, the Linden City Council has adopted a redevelopment plan, which encourages the development of uses on the site consistent with the current zoning (heavy industrial) with specific emphasis on warehousing, light manufacturing, offices, and other non-residential uses. The City of Linden believes the site has the capacity to support a large-scale commercial development. It anticipates that the site will be available for redevelopment upon remediation within three to four years, concurrent with the completion of the proposed modification to Exit 12 of the NJ Turnpike. As this site is currently unavailable and will remain so within the next three to four years, it will be eliminated from further consideration, unless USACE receives information indicating it would be available sooner.

Site 99, Kearny BR1: NJMC 1E Landfill: NJMC indicated that the properties owned by NJMC are part of the 1E Landfill in Kearny. The property has been included in the Meadowlands Golf Course Redevelopment Plan. This plan calls for the development of a golf course/resort project in conformance with the Redevelopment Plan adopted by the Commission on February 28, 2001. The Redevelopment Plan does not permit regional shopping facilities within the redevelopment areas and, therefore, a regional mall would not be consistent with the Plan. Additionally, as pointed out by NJMC, it may be technically and logistically impossible to develop this site due

to the height of the landfill, the environmental closure measures that have been put in place, and the presence of a methane collection system, which extracts billions of cubic feet of gas annually. If the golf course developer exercises a future option, this site would only be available for golf courses. As this site was not available, it was eliminated from further consideration.

5.4.4.3.3 Tier 3

Four off-site alternatives were not eliminated on the basis of Tier 1 and Tier 2 criteria. These sites were:

- Site 47, Bayonne H6;
- Site 55 Woodbridge M3;
- Site 53 Piscataway M1; and
- Site 48 Jersey City H5.

These four sites were further evaluated against Tier 3 criteria. Tier 3 criteria were comprised of logistical and economic limitations, potentially rendering development of a site impractical. None of these sites were rejected on the basis of surrounding population density, access to a four-lane highway, or proximity to competition. All four sites were found to have logistical limitations relating to surrounding land use, which according to the applicant would mean that the construction of the proposed project would be very difficult based on environmental, logistical and economic considerations, and would render the project economically unviable. In addition, all four sites are located in industrial areas and are zoned either "light" or "heavy industrial". Two of the four sites (Site 47, Bayonne H6 and Site 55 Woodbridge M3) are located adjacent to petroleum tank farms, while a third one (Site 53 Piscataway M1) is located next to a sewage treatment plant. The fourth site (Site 48 Jersey City H5) is located in an industrial area adjacent to a railyard.

Based on the evaluation above, none of the sites above evaluated against the Tier 3 criteria would constitute a practicable off-site alternative.

5.4.4.4 New Jersey State Alternative (Continental Airlines Arena Site)

The Continental Airlines Arena site, owned and managed by the State of New Jersey Sports and Exposition Authority (NJSEA), was suggested as an alternative site to the Empire Tract for the proposed Meadowlands Mills development by several commenters to the July 2000 DEIS. In a letter dated February 14, 2001, NJSEA indicated to USACE that the site was not then available and appeared to be too small to accommodate the Mills proposal, and that construction of a new arena in Newark that would make the site available was uncertain.

Representatives of former New Jersey Acting Governor Donald DiFrancesco met separately with representatives of USACE, and environmental groups in March of 2001. On March 20, 2001 the Acting Governor announced that the Mills Corporation had accepted his offer to work with the state, to see if an alternate location could be found for the Meadowlands Mills project. The discussions included potential use of the Continental Airlines arena site as an alternative site. The Acting Governor urged Mills to withdraw or suspend its proposal for building on the Empire

Tract, and stated that a project of this magnitude would have a tremendous negative impact on the ecosystem. On June 21, 2001, the Acting Governor unveiled a plan calling for preservation of the Meadowlands ecosystem including the Empire Tract. . The New Jersey legislature did not act to implement the plan and a new governor took office in January 2002.

Members of the current State Administration wrote to USACE in letter dated May 16, 2002, signed by the Director of the NJSEA, the Commissioner of the NJDEP, and the Commissioner of the NJ Department of Community Affairs. These officials indicated to USACE that recent events superseded the NJSEA's prior position, and that New Jersey State officials now feel that the site may offer an alternative to development on the Empire Tract. The letter stated:

"Specifically, in the context of Governor James E. McGreevey's initiatives to reform the New Jersey Sports and Exposition Authority (Authority) and to bring an arena suitable for professional sports franchises to the City of Newark, we anticipate that significant portions of Authority property that are in close proximity to the Empire Tract will soon become available for redevelopment. Indeed, we expect that a Request for Proposals (RFP) eliciting competitive redevelopment proposals for the site will be issued within ninety (90) days."

In responding to the State's letter, the applicant indicated that it has engaged in discussions with the State of New Jersey regarding potential use of the Continental Airlines arena site, but that it considers the availability of the site to be speculative and that the site by itself is too small to accommodate the applicant's project. The applicant points out that:

- It is questionable as to whether retail use, a primary component of the Meadowlands Mills proposal, is a legally permitted use of the Continental Airlines arena site, and such use may require legislative authorization.
- While the State of New Jersey indicated the site would soon be available for development, funding has not been authorized for the Governor's current proposal, and the professional sports teams involved have yet to negotiate an agreement to move.
- If the site were to become available, the applicant would need to participate in a request for proposal (RFP) process. This process would not guarantee availability of the site solely to the applicant.

Due to the uncertainties surrounding the availability and redevelopment conditions of the Continental Airlines arena site, USACE does not presently consider this site to be a practicable alternative site to fulfill the stated purpose for the project proposed by the applicant. The site may be a potential practicable alternative for future development, but it appears that the site acreage may be insufficient to meet the project purpose that is the subject of its permit application under review. Further consideration by USACE will be made, in the process of reaching a Record of Decision for the permit application. Further State action approving the applicant's project will be required, in accordance with regulations at 33 CFR Part 325.2. That regulation provides that USACE is precluded from issuing a DA permit until after state agencies have issued or waived the required Section 401 Water Quality Certificate and have concurred with the applicant's Coastal Zone Consistency Certification.

5.5 ON-SITE ALTERNATIVES

As part of the on-site alternatives analysis, two principal variations of project design and construction were considered in order to explore the potential for reducing environmental impacts: (1) varying the size of the development footprint and hence the size of the wetland fill area via alternative design configurations, and (2) examining different techniques for fill and foundation construction, storm water management, and roadway alignments.

5.5.1 Development Footprint Alternatives

The objective of the evaluation of alternative on-site design configurations a reduction of the total development footprint of project components on the site, while maintaining the total floor area (square footage) of the project. This resulted in a variety of multilevel configurations affecting all five project components. Each alternative was developed by the applicant within a sequential design process, which generated and then manipulated various design configurations in order to reduce project footprint and environmental impacts. The design process included a variety of techniques, such as stacking of components in multi-story configurations to reduce project footprint, and incorporation of proposals for maximizing shared parking.

5.5.1.1 Past Development Scenarios (Pre-1989)

Since acquisition of the project site by Empire, Ltd., several developments scenarios were proposed in response to changing land use and zoning and market conditions in the region. These development proposals sequentially decreased development footprint and impacts to wetlands. A general development plan was formulated in 1984 which was comprised of a mixture of offices, hotel, industrial and research uses, along with a residential development area (see Figure 5.5-1). This plan was modified in 1987 to eliminate some construction and retain some additional wetland areas and open space. In 1989, another plan was prepared which further reduced the development area (see Figure 5.5-3).

5.5.1.2 Development of Current Footprint Alternatives (1990-Present)

Over the past 11 years, several development alternatives have been proposed for the Empire Tract and reviewed by NJMC. One alternative, Meadowlands Town Center (see Figure 5.5-4), contained retail and residential components and was granted General Plan Approval by the NJMC in April 1993. This alternative was later modified by excluding its housing component. This resulted in a smaller development footprint. This alternative became the 206-acre wetland fill Meadowlands Mills Alternative, presented in the DEIS (2000). Table 5.5-1 shows the evolution of the various development proposals and Figure 5.5-5 shows the development area reduction from 1984 through 2000 (current) proposals.

In this FEIS, seven project configuration alternatives (Meadowlands Mills Town Center, Meadowlands Mills Alternative, and Empire Tract Alternatives A, B, C, D and E) are evaluated. These alternatives were developed as a result of a series of design refinements, incorporating

various multi-story building configurations that reduced the development footprint and the amount of wetland fill (Table 5.5-2) without substantially reducing the project's total floor area.

Table 5.5-1
Characteristics of Mixed-Use Components of On-Site Alternatives

Alternative	Footprint (acres) ⁽¹⁾	Retail/ Entertainment (levels)	Office (levels)	Hotel (levels)	Parking (% decked or underneath structure))	Warehouse	Transit	Residential
Meadowlands Town Center	329	1	10	6	43%	1	Yes	Yes
Meadowlands Mills Alternative	212	1.5	10	6	67%	1	Yes	No
Empire Tract Alternative A	172	2	10	6	79%	1	Yes	No
Empire Tract Alternative B	150	3	10 (incl. Parking)	6	83%	1	Yes	No
Empire Tract Alternative C	138	3	10 (incl. Parking)	6	97%	1	Yes	No
Empire Tract Alternative D	140	2	6-8 (incl. Parking)	11	38% ⁽²⁾	1	Yes	No
Empire Tract Alternative E (including Revised Empire Tract Alternative E)	140	2	6-8 (incl. Parking)	11	38% ⁽²⁾	1	Yes	No

Note: (1) The footprint acreages include both wetlands and uplands
Source: The Mills Corporation 1999, 2000

Development Plan 1984

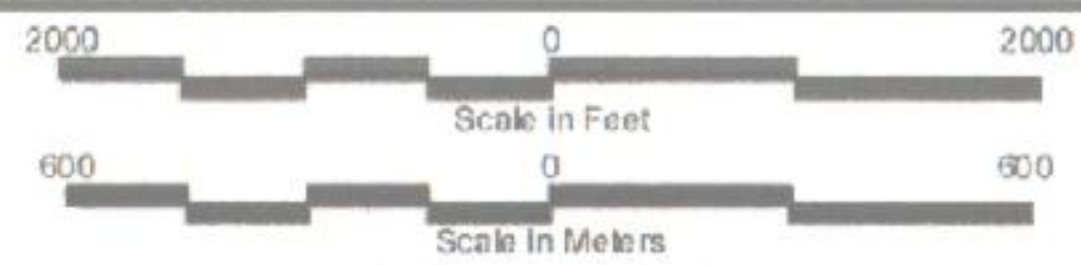


Figure 5.5-1

Development Plan 1987

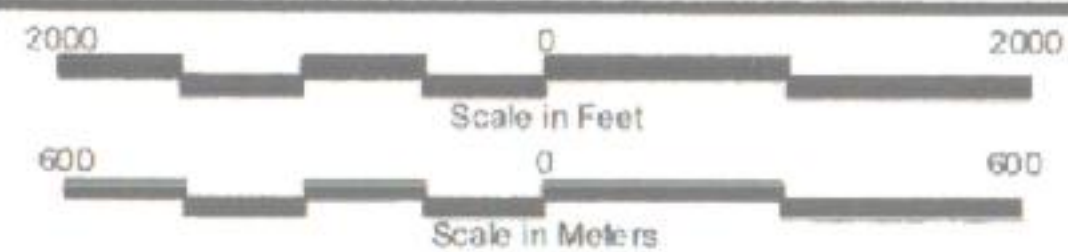
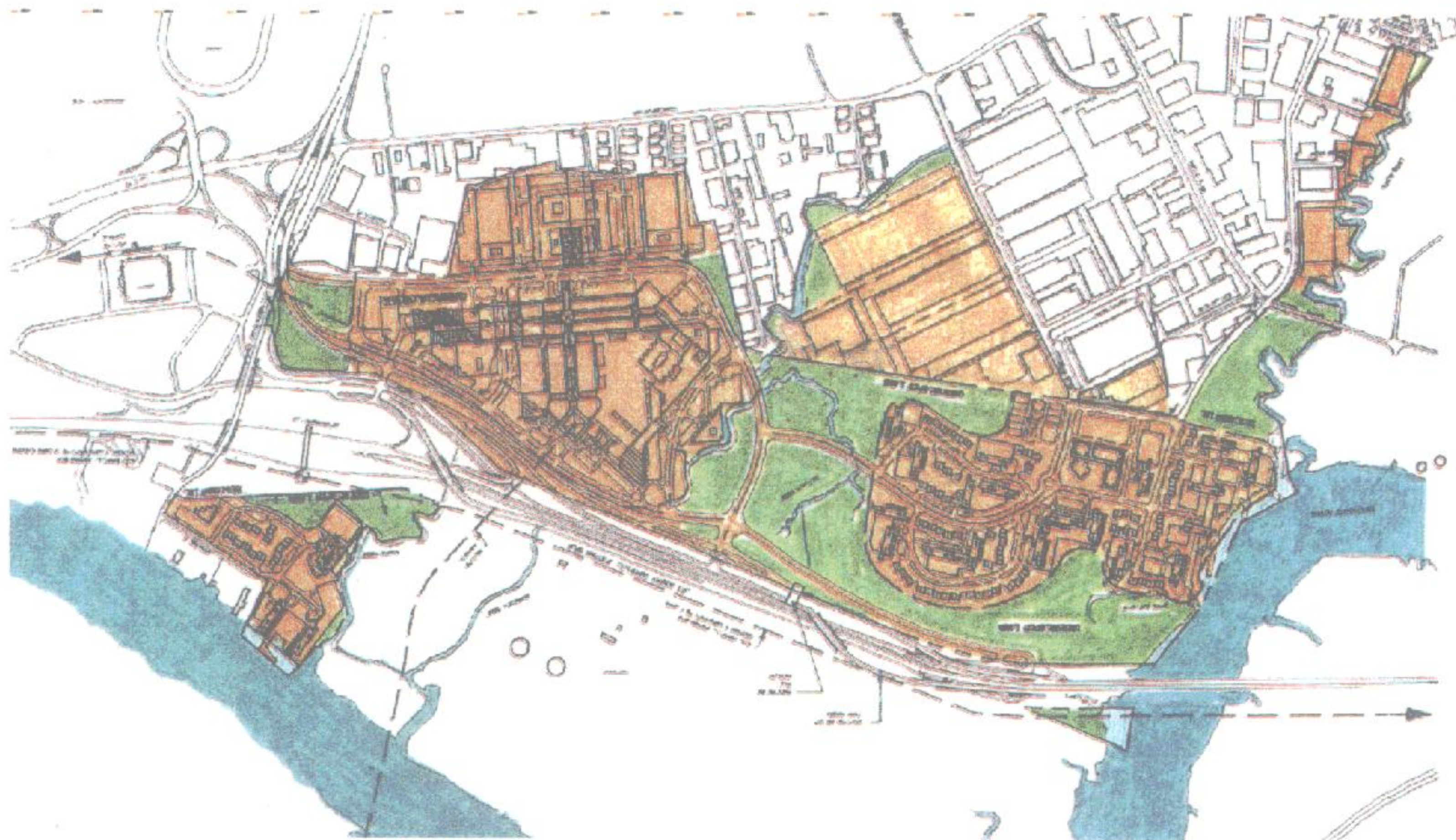


Figure 5.5-2

Development Plan 1989

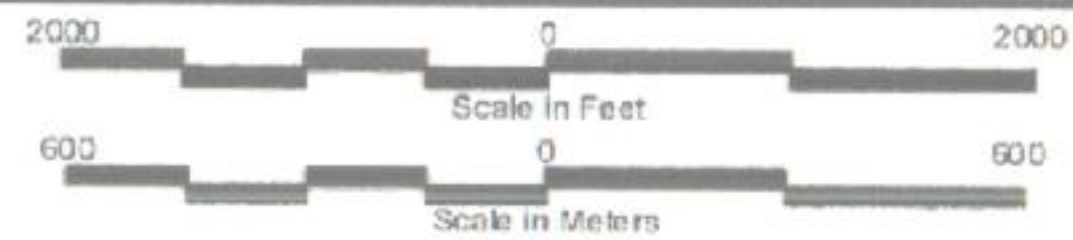
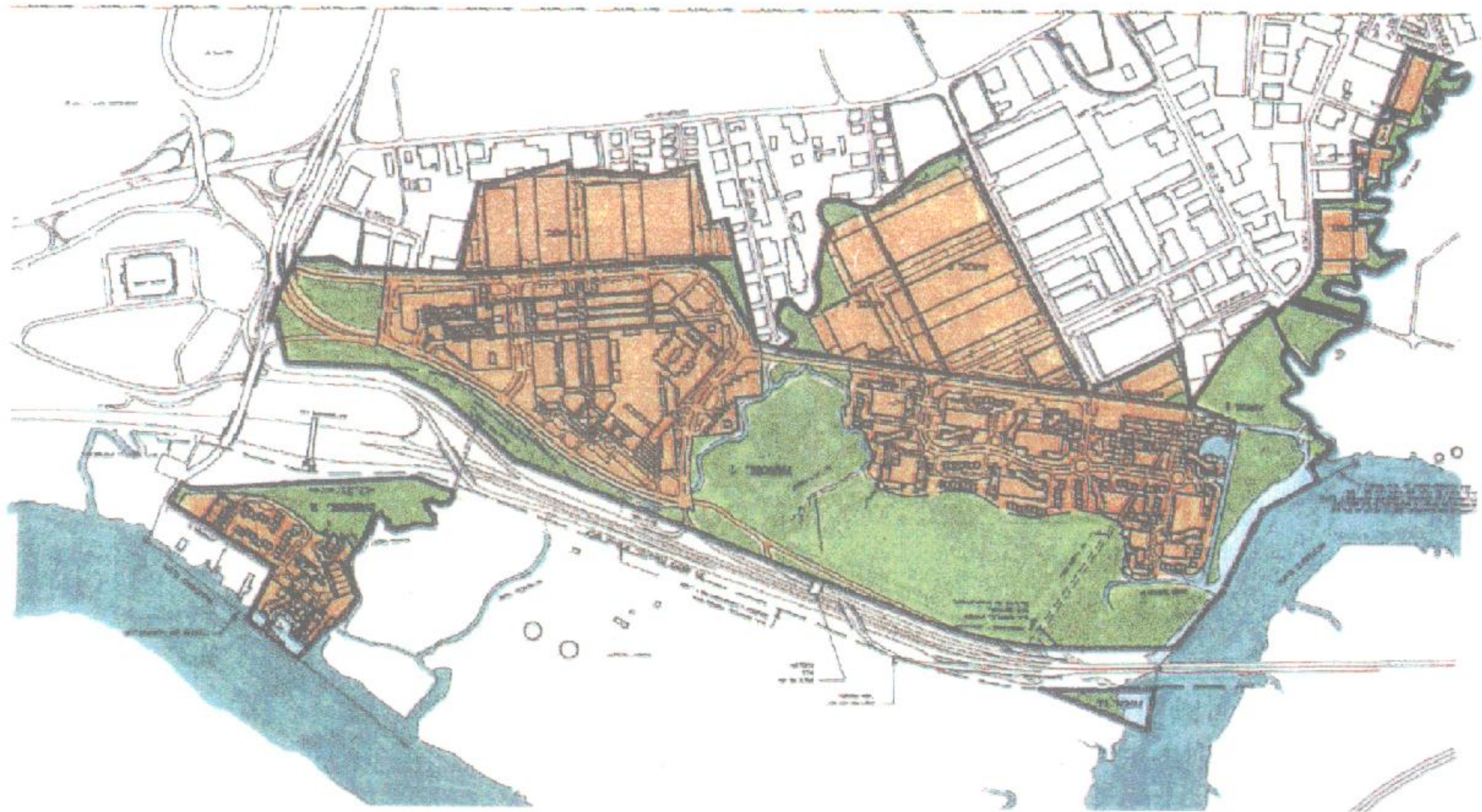


Figure 5.5-3



Meadowlands Town Center 1992

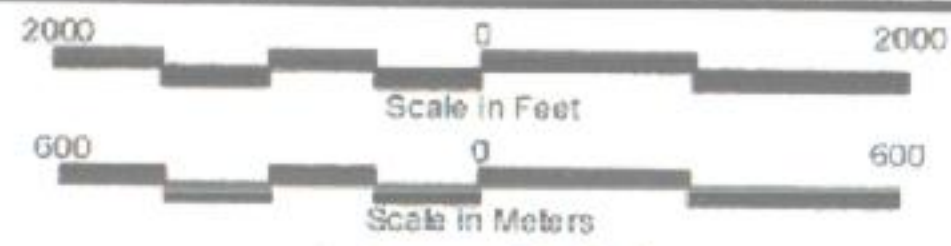


Figure 5.5-4

Minimization of Development Area - Alternate Site Plans for the Empire Tract

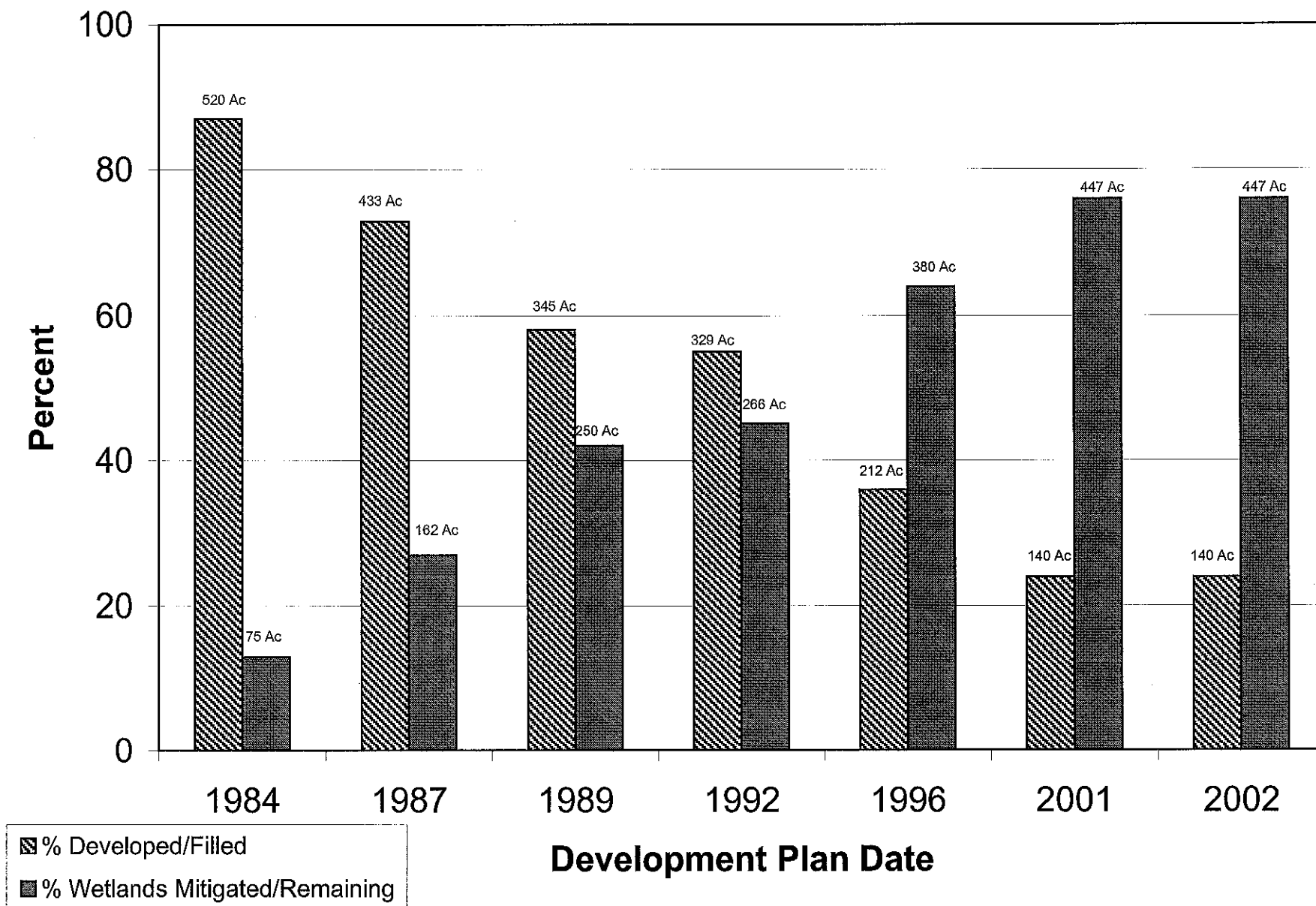


Figure 5.5-5

Table 5.5-2
Distribution of Wetland Acreages of On-Site Alternatives

Alternative	Existing Wetlands (acres)	Total Mitigation (acres)	Wetlands Fill (acres)
Meadowlands Town Center	569	266	313
Meadowlands Mills	569	380	206
Alternative A	569	306	166
Alternative B	569	266	144
Alternative C	569	244	132
Alternative D	569	250	134
Alternative E	569	421 (276 brackish tidal wetland)	134
Alternative E	569	421 (271 brackish tidal wetland)	134

5.5.1.3 Evaluation Criteria for Current On-Site Alternatives

The feasibility of each development footprint alternative was assessed based on technology and logistics, cost and economics, and environmental consequences.

5.5.1.3.1 Technology and Logistics

These criteria examined the technological and logistical feasibility of the alternatives. The functionality of the project component design and layout were considered based upon the project purpose and need and its associated technological and logistical requirements. All of the alternatives assumed the basic configuration of five components.

Retail/Entertainment Center Configuration

The proposed project has a total required floor area for retail/entertainment use of 2,450,000 SF. The applicant's analysis concludes that their preferred approach is for all retail and entertainment operations to be on a single level, or, alternatively, each operation on its own level (Saffron Consulting 2000). A multilevel configuration was used for the retail/entertainment center to reduce the potential project footprint.

Parking Configuration

The total requirement for all proposed project components is approximately 16,600 parking spaces. Although logistically the preferable approach is for all parking to be at grade, parking spaces in multilevel parking garages would allow for a reduction in the parking area footprint. For example, 4,400 parking spaces converted to multilevel parking garages reduces the impact area by 22 acres. All alternatives included a target parking number of 16,600 spaces.

Building Height Limitation

A structural height restriction of 159 ft above mean sea level has been established by the FAA due to proximity of the Empire Tract to Teterboro Airport.

Tenant Operational Suitability

The retail/entertainment center configuration discussed above influences several related logistical factors, including how tenants can operate successfully. The Mills concept focuses on a single-level structure, which is preferred by traditional Mills anchor tenants (Saffron Consulting 2000). The logistical suitability of multilevel layouts was evaluated based upon customer mobility when using shopping carts and freight movement to the second level from the loading docks.

Consumer Suitability

Different configurations of a retail/entertainment center were evaluated by the applicant based on consumer habits. Single-level malls are preferable to consumers and therefore more economically successful (Saffron Consulting 2000).

5.5.1.3.2 Cost/Economics

These criteria examined the cost and economics of the alternatives based on the economic feasibility of bringing each alternative successfully to market (Saffron Consulting 2000). An estimate of potential financial returns to the developer for each alternative was determined based upon prevailing market conditions, estimates of revenue, operating costs and development costs. The information for the analysis was based upon review of market studies for the project, the project site and surrounding region, industry publications and standards, select market interviews and additional information provided by the applicant. Projections of the financial performance and development costs were based on each of the components as presented for each of the alternatives.

5.5.1.3.3 Environmental Consequences

These criteria examined the environmental consequences of each alternative in relation to several environmental parameters, including wetland mitigation value, total area of wetlands fill, and the environmental consequences arising from the placement of the fill.

The environmental impacts associated with placement of fill in wetlands are generally proportional to the extent of area filled. Impacts related to wetland fill were evaluated for each alternative within the range of footprints and associated degrees of wetland fill.

Wetlands Mitigation Value

The project was evaluated to determine the extent to which the mitigation plan replaced wetland functions and values lost as a result of the fill.

Project Wetlands Fill

The amount of wetlands acreage filled for the project footprint was evaluated. As the retail/entertainment center and parking were reconfigured for a multilevel layout, wetlands fill acreage was decreased.

Environmental Consequences of Fill

A summary of the environmental consequences and related adverse impact from the placement of fill was evaluated.

5.5.1.4 Description of Different Project Footprint Alternatives

5.5.1.4.1 Meadowlands Town Center Alternative (313-acre Wetland Fill Alternative)

The Meadowlands Town Center proposed a mixed-use development, including a super-regional retail/entertainment center, two hotels with a total of 1000 guest rooms, and office space, with mass-transit facilities to support the commercial development, as well as a residential component with 6,200 units, and neighborhood retail and community services.

The Meadowlands Town Center represented the largest development footprint of the alternatives evaluated, with a footprint of 329 acres and including 313 acres of wetland fill. Two acres of wetlands fill for transportation-related activities within the New Jersey Turnpike right-of-way were required.

Technology/Logistics

The single-level retail/entertainment center configuration of this alternative could be preferable for the operational requirements of prospective anchor stores and specialty retail tenants because it included high ceilings for vertical merchandise display or interior mezzanines, the use of shopping carts and central checkout counters, and direct exposure and access to at-grade parking. This configuration also offers the highest ratio of net selling space to gross buildable area.

Cost/Economics

Projected costs indicate that the Meadowlands Town Center Alternative would have resulted in a

net operating income of \$127.7 million per year and a total development cost basis of \$1.382 billion (Saffron Consulting 2000). Although the net operating income is the highest of all alternatives considered, the construction costs are considerably higher than any of the other alternatives.

Environmental Consequences

As a result of the 313 acres of wetland fill proposed for Meadowlands Town Center, this alternative would generate the greatest increase in storm water runoff to the Moonachie Creek basin. Therefore, this alternative had the highest potential for upstream flooding. The storm water management system for this alternative included a network of drainage pipes throughout the site to collect and transport storm water runoff to the existing tide gates for discharge to the Hackensack River. Pumping stations would serve as additional storm water outfalls. In the Meadowlands Town Center Alternative no water quality detention basins were proposed and storm water runoff was channeled to a freshwater wetland mitigation area. This would result in a potential for adverse water quality impacts. The commercial and residential areas proposed in this alternative would function as a levee system for off-site areas and the development would be elevated above the 100-year flood elevation from the Hackensack River. The proposed freshwater marsh on the site would be used for storage of runoff. This alternative would have the greatest adverse environmental impacts of all alternatives considered. The volume of wetlands fill for Meadowlands Town Center would be the highest and the potential for adverse fluvial flooding and water quality impacts was the greatest among all the alternatives.

Under this alternative, 266 acres would become enhanced or preserved wetlands. The mitigation would be similar to that proposed for the 206-acre Meadowlands Mills Alternative (Section 5.5.1.4.2). Compared to the existing wetlands, the enhanced wetland area would improve wetland functions and values on the site on a per-acre basis. Of the 266 acres, 208 acres of wetlands would be enhanced and 58 acres of existing wetlands preserved. The wetland enhancement component of the project would create 68 acres of freshwater wetlands and 140 acres of tidal brackish wetlands.

5.5.1.4.2 Meadowlands Mills Alternative (206-acre Wetland Fill Alternative)

The Meadowlands Mills Alternative consists of a five-component mixed-use commercial development comprising a super-regional retail/entertainment center in a split-level design, 1,000-guest-room hotel in a six-story configuration, and office space, with warehouse distribution and mass-transit facilities to support the commercial development (see Figure 4.2-2).

The Meadowlands Mills Alternative has a development footprint of 212 acres with 206 acres of wetland fill, including 2 acres of wetlands fill for transportation-related activities within the New Jersey Turnpike right-of-way.

Technology/Logistics

The split-level retail/entertainment center configuration of this alternative includes placement of 32% of the total anchor store space and approximately 45,000 SF of food and entertainment uses on a second level. This arrangement can be disadvantageous from the retail marketing perspective (Saffron Consulting 2000). Consumers are generally willing to visit an upper level for food purchases, but the frequency of visits to second floor anchors is less than that for first floor anchors. A single-level mall is easier to negotiate by shoppers unfamiliar with a facility. A single-level mall facilitates cross-shopping throughout the complex, as shoppers encounter various retail offerings as they move through the complex. Frequency of visits to the second floor stores would be less than if the stores were all located on the first level. As a result, the sales volume per square feet of floor area would be likely to be less than for a single-story configuration.

To partially offset this prospective loss of revenue, the stores occupying the second level would be entertainment-related stores. Such stores typically are exempt from Bergen County's Sunday closure law, which prohibits the sale of apparel, household furnishings, office supplies and computers. Thus, while the first floor of the mall would be closed on Sundays, the second floor would remain in operation. This configuration should attract people visiting Meadowlands sports venues and others seeking refreshment or local entertainment to the second floor of the development on Sundays, a more appropriate marketing approach than having some stores open in the midst of other shuttered tenants. Closure of the first floor completely on Sundays would also reduce operating costs. A split-level configuration would provide direct access to the second floor from two parking decks for all Sunday visitors and for visitors seeking food and/or entertainment throughout the week.

Cost/Economics

Projected costs indicate that the Meadowlands Mills Alternative would have resulted in a net operating income of \$106 million per year and a total development cost basis of \$1.016 billion (Saffron Consulting 2000). The Meadowlands Mills Alternative offers the strongest financial yield compared to all other alternatives.

Environmental Consequences

Storm water runoff to the Moonachie Creek basin could be significant as a result of the large area of impervious surfaces associated with the Meadowlands Mills Alternative. To alleviate this the comprehensive storm water management system designed for the Meadowlands Mills Alternative would include a network of drainage pipes throughout the site to collect storm water runoff and direct these flows to water quality detention basins and enhanced wetlands. The proposed system of developed and preserved freshwater wetlands on the site would retard and attenuate storm water flow, and would be supplemented by storm water pumping under 100-year fluvial flow conditions. Stormwater discharge from the site would normally be accomplished by gravity through tide gates, and as water levels increase, propeller pumps in the proposed pumping and tide gate station would incrementally be activated to ensure storm water evacuation and flood

control. By pumping storm water from extreme storm events to the Hackensack River, water surface elevations in the proposed freshwater wetlands would be maintained at an elevation of 2 ft NGVD or less. This elevation is below elevations of the surrounding developed areas.

The wetland mitigation project for this alternative would enhance and preserve a total of 380 acres of on-site remaining wetlands. Of the 380 acres, 335 acres of wetlands would be enhanced and 45 acres of existing wetlands preserved. The wetland enhancement component of the project would result in 206 acres of freshwater wetlands and 129 acres of tidal brackish wetlands.

The environmental consequences of this alternative were discussed in detail in the DEIS. In commenting upon the draft EIS, USEPA Region 2 indicated that the Meadowlands Mills Alternative would be found to be environmentally unacceptable, since less damaging practicable alternatives (such as Empire Tract Alternative D and E) were available. USEPA also stated that if USACE were to issue a permit for fill of wetlands as described in this alternative, that USEPA might prohibit the specification of the Empire Tract as a disposal site, in accordance with Section 404 (c) of the Clean Water Act.

Applicant's Preferred Alternative

USACE no longer considers the applicant's preferred alternative, the Meadowlands Mills alternative, to be a viable alternative, and that alternative is not evaluated further in this FEIS. If USACE does not issue a permit for the amount of fill currently proposed within the permit application, the applicant may accept a permit for a smaller fill amount. USACE concludes that the 206-acre fill continues to be the applicant's preferred alternative. The applicant has declined USACE's request to alter its permit application to reduce the amount of fill.

5.5.1.4.3 Empire Tract Alternative A (166-acre Wetland Fill Alternative)

This alternative (Figure 5.5-6) would contain the five project components and same square footage as the Meadowlands Mills Alternative. The hotel and office components would be similar to the Meadowlands Mills Alternative. The warehouse/distribution and transit facility components would also be retained in the Alternative A plan in the same configuration as Meadowlands Mills. This alternative would provide for 67% stacked on-site parking and would have to include retail and entertainment on both levels.

The development footprint of this alternative would be 172 acres. The multilevel design of the parking and retail/entertainment component reduces the development footprint by 157 acres from the Meadowlands Town Center Alternative and by 40 acres from the Meadowlands Mills Alternative. This alternative would require the placement of fill within 166 acres of wetlands, including 2 acres of wetlands fill for transportation-related activities within the New Jersey Turnpike right-of-way.

Empire Tract Alternative A

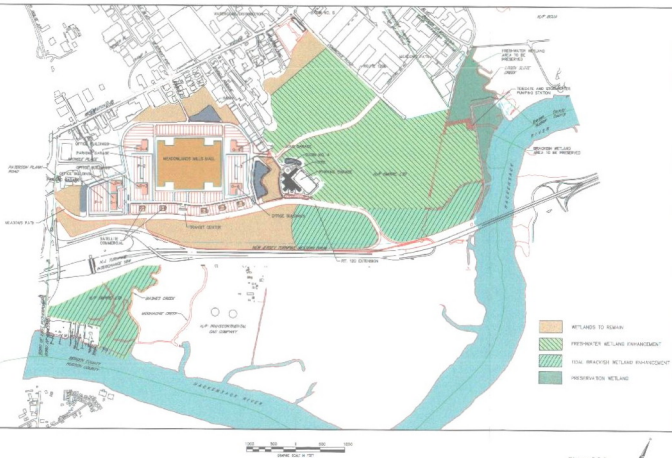


Figure 5.5-6

Technology/Logistics

A two-level retail configuration of this alternative would be less acceptable to prospective anchor stores and specialty retail tenants (Saffron Consulting 2000). This is because such a configuration would not allow high ceilings for vertical merchandise display or interior mezzanines, or the use of shopping carts and central checkout counters, and direct exposure and access to at-grade parking would be limited. The reluctance of consumers to visit a shopping level other than where they parked and entered could result in an unacceptable level of sales volume reduction. Due to the interior space taken up by multiple stairways and elevators for vertical movement of consumers, this configuration would offer a lower ratio of net selling space to gross buildable area compared to the split level and single level alternatives.

Cost/Economics

Projected costs for the Empire Tract Alternative A indicate a net operating income of \$97.2 million per year and a total development cost basis of \$1.082 billion (Saffron Consulting 2000). The higher construction cost for this alternative, combined with lower estimated mall rental revenues, results in a relatively lower financial yield.

Environmental Consequences

This alternative was discussed in the DEIS. USEPA concluded that this alternative would be 'Environmentally Unsatisfactory'.

In this alternative, approximately 420 acres of the site could remain as wetlands. Mitigation would include both wetlands enhancement and preservation. The wetland mitigation project for this alternative would enhance and preserve a total of 306 acres of on-site remaining wetlands. Of the 306 acres, 270 acres of wetlands would be enhanced and 36 acres of existing wetlands preserved. The wetland enhancement component of the project would result in 166 acres of freshwater wetlands and 104 acres of tidal brackish wetlands.

The objective of this combination of enhancement and preservation is to result in no net loss of wetland values and functions. This approach is explained in more detail in Chapters 7 and 8 for those alternatives carried forward for evaluation. The increase in storm water runoff to the Moonachie Creek basin associated with the 166 acres of wetland fill proposed for this alternative could result in a high potential for upstream flooding. To alleviate this, the storm water management system would include a network of drainage pipes to collect and transport storm water runoff to water quality detention basins and wetlands. Pumping stations would serve as additional storm water outfalls during extreme rain events.

According to the applicant's mitigation plan, 114 of the remaining 120 acres would not be enhanced or preserved. Unless this remaining acreage were made subject to a deed restriction by a special condition of any DA permit which might be issued, the remaining acreage would presumably be retained by Empire, Ltd. for possible future development.

5.5.1.4.4 Empire Tract Alternative B (144-acre Wetland Fill Alternative)

Alternative B (Figure 5.5-7) is similar to Alternative A, except that it would modify the project footprint through additional multilevel configuration. In addition to stacking the hotel and office components, Alternative B would require construction of a retail/entertainment center on three levels, rather than the two-level designs proposed under Alternative A and the Meadowlands Mills Alternative. In addition, parking levels would have to be added to the base of the office buildings, thereby reducing the parking footprint. Warehouse/distribution and transit facility components would be the same in the Empire Tract Alternative B as in the Meadowlands Mills Alternative.

Empire Tract Alternative B has a development footprint of 150 acres. This alternative would require the placement of fill within 144 acres of wetlands, including 2 acres of wetlands fill for transportation-related activities within the New Jersey Turnpike right-of-way.

Technology/Logistics

The three-level retail/entertainment center configuration of this alternative would be less acceptable to prospective anchor stores and specialty retail tenants than the single-level, split-level and two-level configurations (Saffron Consulting 2000). Similar to Alternative A, it would not include high ceilings for vertical merchandise display or interior mezzanines or the use of shopping carts and central checkout counters. The potential for direct exposure and access to at-grade parking would be more limited than for the single-level, split-level and two-level configurations. This alternative includes more levels than Alternative A. Based on shopping preference criteria (the reluctance of consumers to visit shopping levels other than that at which they parked and entered) used for the other alternatives, Alternative B would see lower sales volumes than Alternative A and the Meadowlands Mills Alternative. Due to the greater amount of interior space taken up by multiple stairways and elevators for vertical movement of consumers, this configuration would offer a lower ratio of net selling space to gross buildable area than single-level, split-level and two-level alternatives.

For this alternative the height of the buildings that accommodate the components as described in the project purpose was modified in order to reduce the development footprint and wetland fill acreage. In the case of the office building, parking levels were included within the building design to reduce overall footprint. The required square footage of office space, in combination with a smaller building footprint and the addition of parking levels, resulted in a building height exceeding the FAA height restriction for the site. This would have to be modified for the construction of this alternative to be feasible.

Cost/Economics

Projected costs indicate that the Empire Tract Alternative B would result in a net operating income of \$89.8 million per year and a total development cost basis of \$1.079 billion (Saffron Consulting 2000). Similar to Empire Tract Alternative A, the net operating income estimate is

Empire Tract Alternative B

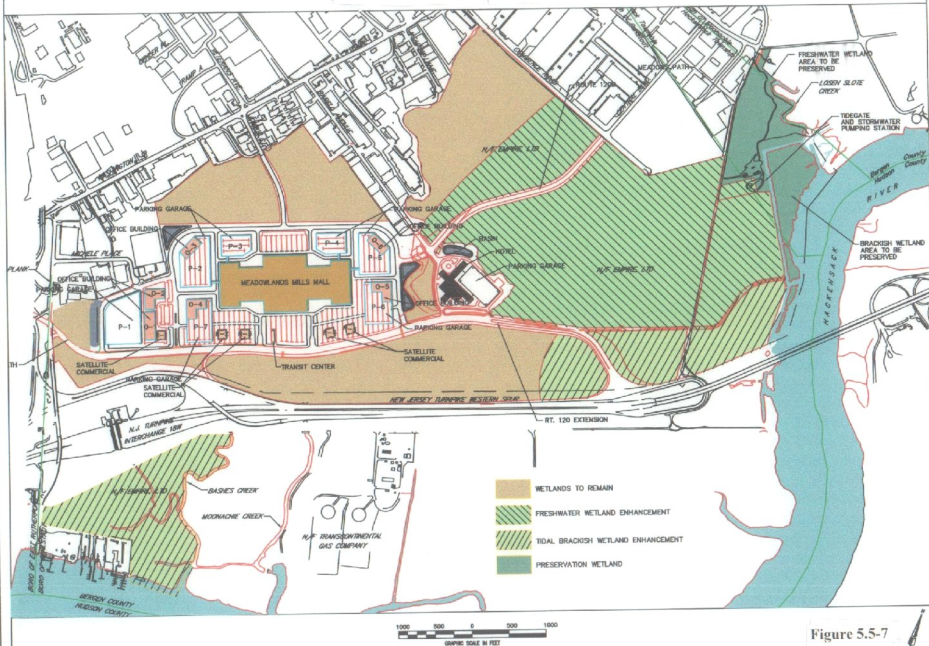


Figure 5.5-7

lowered as a result of the mall's three-story design.

Environmental Consequences

This alternative was discussed in the DEIS. USEPA concluded that this alternative would be 'Environmentally Unsatisfactory'.

In this alternative, approximately 436 acres (74% of the project site) could remain wetlands. As with Alternative A, wetland mitigation would consist of enhancement and preservation. The wetland mitigation project for this alternative would enhance and preserve a total of 266 acres of on-site remaining wetlands. Of the 266 acres, 234 acres of wetlands would be enhanced and 32 acres of existing wetlands preserved. The wetland enhancement component of the project would result in 144 acres of freshwater wetlands and 90 acres of tidal brackish wetlands.

The increase in storm water runoff to the Moonachie Creek basin associated with the 144 acres of wetland fill proposed in Empire Tract Alternative B could lead to an increased risk of upstream flooding. To alleviate this, the proposed storm water management system would include a network of drainage pipes to collect and transport storm water runoff to water quality detention basins and wetlands. Pumping stations would serve as additional storm water outfalls during extreme rain events. This alternative could cause fluvial flooding, because of the preservation of less existing wetlands. There would be little difference between this alternative and other alternatives with respect to tidal flooding.

According to the applicant's mitigation plan, 170 of the remaining 436 acres would not be enhanced or preserved. Unless this remaining acreage were made subject to a deed restriction by a special condition of any DA permit which might be issued, the remaining acreage would presumably be retained by Empire, Ltd. for possible future development.

5.5.1.4.5 Empire Tract Alternative C (132-acre Wetlands Fill Alternative)

Empire Tract Alternative C (Figure 5.5-8) would be similar to Alternatives A and B, except it would reduce the project footprint by another 12 acres compared to Alternative B, to 138 acres. To achieve this reduction, this alternative would include the location of deck parking underneath four office buildings. There would be no change to the warehouse/distribution and transit facility components.

Empire Tract Alternative C has a development footprint of 138 acres. This alternative would require the placement of fill within 132 acres of wetlands, including 2 acres of wetlands fill for transportation-related activities within the New Jersey Turnpike right-of-way.

Technology/Logistics

Based on the technology and logistical criteria applied for the preceding alternatives, which have less than three building levels, the three-level retail/entertainment center configuration of

Alternative C could be less acceptable to prospective anchor stores and specialty retail tenants. Like the two-level configuration, it would not include high ceilings for vertical merchandise display or interior mezzanines or the use of shopping carts and central checkout counters. The potential for direct exposure and access to at-grade parking would be more limited than for the two-level configuration. The anticipated reduction in sales volume resulting from the reluctance of consumers to visit shopping levels other than that at which they parked and entered would be the greatest of reductions out of all the multilevel alternatives (Saffron Consulting 2000). Due to the greater amount of interior space taken up by multiple stairways and elevators for vertical movement of consumers, this configuration would offer a lower ratio of net selling space to gross buildable area than single-level and two-level alternatives. The height of the office buildings with parking garages in this alternative would exceed the FAA height restriction for the site. This would have to be modified for the construction of this alternative to be feasible.

Cost/Economics

Projected costs indicate that the Empire Tract Alternative C would result in a net operating income of \$89.8 million per year and a total development cost basis of \$1.106 billion (Saffron Consulting 2000). The financial performance ratio for this alternative is slightly lower than Empire Tract Alternative B due to the increased development cost associated with this alternative.

Environmental Consequences

In this alternative, approximately 454 acres of the site could remain as wetlands. As with Alternatives A and B, wetland mitigation would consist of enhancement and preservation. The wetland mitigation project for this alternative would enhance and preserve a total of 244 acres of on-site remaining wetlands. Of the 244 acres, 215 acres of wetlands would be enhanced and 29 acres of existing wetlands preserved. The wetland enhancement component of the project would result in 132 acres of freshwater wetlands and 83 acres of tidal brackish wetlands.

Of all alternatives, Empire Tract Alternative C is anticipated to produce the lowest increase in storm water runoff to the Moonachie Creek basin. As a result, this alternative would have the lowest potential for upstream flooding. The proposed storm water management system would include a network of drainage pipes to collect and transport storm water runoff to water quality detention basins and wetlands. Pumping stations would serve as additional storm water outfalls during extreme rain events. This alternative would have the lowest potential for fluvial flooding.

According to the applicant's mitigation plan, 210 of the remaining 454 acres would not be enhanced or preserved. Unless this remaining acreage were made subject to a deed restriction by a special condition of any DA permit which might be issued, the remaining acreage would presumably be retained by Empire, Ltd. for possible future development.

Empire Tract Alternative C

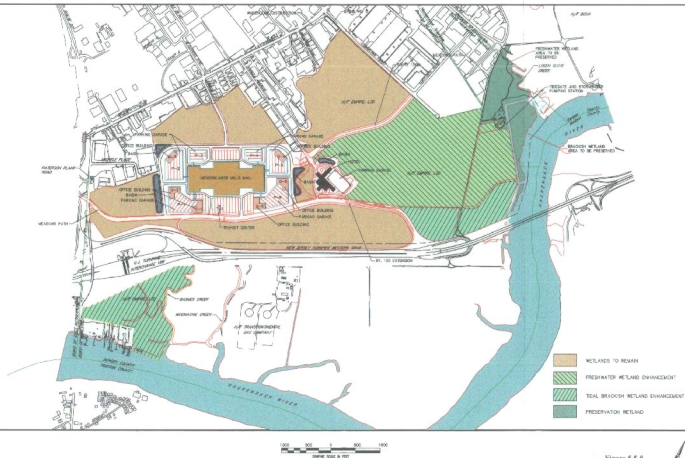


Figure 5.5-8

5.5.1.4.6 Empire Tract Alternative D (134-acre Wetland Fill Alternative)

Empire Tract Alternative D consists of a retail/entertainment center in an elevated two-level design above at-grade parking, a regional office center in multi-story towers (6 to 8 levels), a hotel conference center with 521 rooms in an 11-story configuration, a warehouse/distribution component, a regional transit facility and a 250-acre wetlands mitigation project.

Empire Tract Alternative D (Figure 5.5-9) would reduce the total wetland fill required for the project through the reduction of the total size of the project components, the further clustering of all development components onto one development area on the site, and the vertical massing of the project components.

Empire Tract Alternative D has an on-site development footprint of 140 acres. The development area occupies 96 acres on the site. The transportation components occupy 42 acres on site and 2 acres off site. Empire Tract Alternative D would require the placement of fill in 90.5 acres of wetlands for the development and 43.5 acres of wetlands for related infrastructure, for a total of 134 acres of wetland fill which includes 2 acres of wetland fill for transportation-related activities off site within the New Jersey Turnpike right-of-way.

Technology/Logistics

The two-level configuration of this alternative could be less acceptable to prospective anchor stores and specialty retail tenants than the single-level and split-level configurations (Saffron Consulting 2000). Similar to Empire Tract Alternatives A, B and C, this alternative would not allow high ceilings for vertical merchandise display or interior mezzanines or the use of shopping carts and central checkout counters. The potential for direct exposure and access to at-grade parking would be more limited than for single-level and split-level configurations. Based on shopping preference criteria, Empire Tract Alternative D would see lower sales volumes than Empire Tract Alternative A and the Meadowlands Mills Alternative. Due to the greater amount of interior space taken up by multiple stairways and elevators for vertical movement of consumers, this configuration would offer a lower ratio of net selling space to gross buildable area than single-level and split-level configurations.

For this alternative, the size, configuration and height of the buildings that accommodate the components as described in the project purpose were modified in order to reduce the development footprint and wetland fill acreage. The total square footage of the project components was reduced to 4,643,342 SF compared to 5,513,000 SF for the Meadowlands Mills Alternative and Empire Tract Alternatives A, B and C. The development area was clustered in the southwestern section of the Empire Tract with all components provided in one development area near existing development on adjacent properties. All major buildings in the development area would be elevated to allow for surface parking underneath the buildings. In addition, parking decks would be utilized to reduce that portion of the development area required for surface parking.

Cost/Economics

Projected costs indicate that the Empire Tract Alternative D would result in a net operating income of \$81.2 million per year and a total development cost basis of \$0.796 billion (Saffron Consulting 2000).

Environmental Consequences

This alternative was previously analyzed in detail in the DEIS, and is further analyzed in Chapter 7 of this EIS.

Based upon footprint size, the increase in storm water runoff to the Moonachie Creek basin associated with the 134 acres of wetland fill would be one of the least anticipated for all of the alternatives examined based upon footprint size. The proposed storm water management system would collect runoff within the development area through a series of catch basins and discharge it through a pump system to the remaining wetlands. Runoff from major roadways would be directed to vegetative filter strips located along the embankment of the roadway. Runoff from rooftops would be directed to the remaining wetlands. The reduction in the size of the total square footage for this alternative would slightly reduce demand for potable water, sanitary flow and traffic volumes compared to the other alternatives.

Within this alternative, approximately 437 acres of the site could remain wetlands. The wetland mitigation project for this alternative would enhance and preserve a total of 250 acres of on-site remaining wetlands (Table 5.5-2). Of the 250 acres, 221 acres of wetlands would be enhanced and 29 acres of existing wetlands preserved. The wetland enhancement component of the project would result in 136 acres of freshwater wetlands and 85 acres of tidal brackish wetlands.

According to the applicant's mitigation plan, 187 of the remaining 337 acres would not be enhanced or preserved. Unless this remaining acreage were made subject to a deed restriction by a special condition of any DA permit which might be issued, the remaining acreage would presumably be retained by Empire, Ltd. for possible future development.

5.5.1.4.7 Empire Tract Alternative E (134-acre Wetland Fill Alternative)

Empire Tract Alternative E consists of a retail/entertainment center in an elevated two-level design above at-grade parking, a regional office center in multi-story towers (6 to 8 levels), a hotel conference center with 521 rooms in an 11-story configuration, a warehouse/distribution component, a regional transit facility and a 421-acre wetlands mitigation project.

The Empire Tract Alternative E has an on-site development footprint of 140 acres (Figure 5.5-10). The development area occupies 96 acres on the site in the same configuration as in Alternative D.

Empire Tract Alternative D



FIGURE 5.5-9

EMPIRE TRACT ALTERNATIVE E



Alternative E would require the placement of fill in 90.5 acres of wetlands for the development and 43.5 acres of wetlands for related infrastructure, for a total of 134 acres of wetland fill. The wetlands fill for infrastructure would include 39.5 acres of on-site roadways, 1.5 acres of on-site storm water basin dike and outfall aprons, and 2.5 acres of off-site transportation-related improvements within the New Jersey Turnpike, Paterson Plank Road and Route 120 rights-of-way.

Technology/Logistics

The two-level configuration of this alternative could be less acceptable to prospective anchor stores and specialty retail tenants than the single-level and split-level configurations (Saffron Consulting 2000). Similar to Empire Tract Alternatives A, B, C, and D, this alternative would not allow high ceilings for vertical merchandise display or interior mezzanines or the use of shopping carts and central checkout counters. The potential for direct exposure and access to at-grade parking would be more limited than for single-level and split-level configurations. Based on shopping preference criteria, Empire Tract Alternative E would be expected to produce lower sales volumes than Empire Tract Alternative A and the Meadowlands Mills Alternative, and similar sales volumes to Empire Tract Alternative D. Due to the greater amount of interior space taken up by multiple stairways and elevators for vertical movement of consumers, this configuration would offer a lower ratio of net selling space to gross buildable area than single-level and split-level configurations.

For this alternative, the size, configuration and height of buildings were modified in order to reduce the development footprint and wetland fill acreage. The total square footage of the project components was reduced to 4,643,342 SF compared to 5,513,000 SF for the Meadowlands Mills Alternative and Empire Tract Alternatives A, B and C. The development area was clustered in the southwestern section of the Empire Tract with all components provided in one development area near existing development on adjacent properties. All major buildings in the development area would be elevated to allow for surface parking underneath the buildings. In addition, parking decks would be utilized to reduce that portion of the development area required for surface parking.

Cost/Economics

Based on Alternative D, projected costs indicate that the Empire Tract Alternative E would result in a net operating income of \$81.2 million per year and a total development cost basis of \$0.796 billion (Saffron Consulting 2000). The Empire Tract Alternative E has a smaller financial yield compared to the Meadowlands Mills Alternative, and a similar financial yield to Empire Tract Alternative D.

Environmental Consequences

The impacts from this alternative are analyzed and presented in detail in Chapter 7 of this EIS.

The Empire Tract Alternative E storm water management plan was modified from Empire Tract Alternative D by design of a smaller storm water basin located between Route 120A and the New Jersey Turnpike. This plan proposes to direct storm water runoff from the development through the basin and into the tidal portion of Bashes Creek. The storm water basin, which utilizes a diked 14-acre portion of existing wetlands for water quality treatment, differs from water quality basins proposed under the Meadowlands Mills Alternative and Empire Tract Alternatives A, B and C. Specifically, Empire Tract Alternative E minimizes wetland fill by only requiring fill to create the sides of the basin, leaving the bottom unfilled. The storm water management plan for Empire Tract Alternative E also differs from the Meadowlands Mills Alternative and Empire Tract Alternatives A, B, C and D, in that it directed storm water from the development from a water quality basin into the tidal portion of Bashes Creek. This prevents additional storm water runoff into the non-tidal wetlands that currently receive runoff from the surrounding area. The increase in storm water runoff to the Moonachie Creek basin associated with the 134 acres of wetland fill would be one of the lowest anticipated for all of the alternatives. The proposed storm water management system would collect runoff within the development area through a series of catch basins and discharge it through a pump system to the remaining wetlands. Runoff from major roadways would be directed to vegetative filter strips located along the embankment of the roadway. Runoff from rooftops would be directed to the remaining wetlands. The reduction in the size of the total square footage for this alternative would slightly reduce demand for potable water, sanitary flow and traffic volumes compared to the other alternatives.

In this alternative, approximately 437 acres of the site could remain wetlands. The wetland mitigation project for Empire Tract Alternative E was developed to maximize the restoration of tidal wetlands on-site and attain a target of 271 acres of tidal restoration, in conformance with the USEPA's 2001 mitigation ratio analysis for the project based on wildlife habitat (EPA 2001). The Empire Tract alternative E provides: 276 acres of tidal restoration of existing non-tidal wetlands, 130 acres of enhancement of existing non-tidal wetlands for water quality improvement and flood storage, and 15 acres of wetlands preservation. The wetlands mitigation plan (Figure 8.2-4) also includes the creation of a new tidal barrier adjacent to Moonachie Creek, extending from the New Jersey Turnpike to Commerce Boulevard, which would allow for daily tidal flow from the Hackensack River into the tidal restoration component of the mitigation plan. The mitigation plan provides for the establishment of a 15-foot vegetated buffer adjacent to the tidal brackish wetland. The buffer would likely regenerate common reed vegetation.

5.5.1.4.8 *Revised Empire Tract Alternative E (134-acre Wetland Fill Alternative)*

The Revised Empire Tract Alternative E is similar to Empire Tract Alternative E, but has a different mitigation plan. The applicant revised the mitigation plan at USACE's request in response to agency comments received on the preliminary FEIS. The revised plan was modified from the original Empire Tract Alternative E to incorporate an increased percentage of emergent marsh, with a corresponding decrease in the percentage of open water and mudflats proposed. The 15-foot wide tidal wetland buffer proposed in the original Alternative E plan between the mitigation area and roadway areas on the Empire Tract was widened to 50 feet, and would incorporate shrub and tree plantings in the buffer. To reduce potential *Phragmites* reinvasion,

some proposed upland areas were relocated from the fringe of the tidal restoration area into the emergent marsh to create islands and increase habitat interspersion. The revised mitigation plan also included a water barrier along the entire perimeter of the tidal restoration area to hinder invasion by common reed. Figure 8.2-7 (Chapter 8) presents a graphical depiction of the revised wetland mitigation plan.

The revised wetland mitigation plan for Empire Tract Alternative E was developed to maximize the restoration of brackish wetlands on the site, and attain a target of 272 acres of tidal restoration. The revised wetland mitigation plan provides for an increase in the area of intertidal emergent marsh from approximately 40 percent originally proposed under Empire Tract Alternative E, to 65 percent of the total wetland tidal restoration area under the revised plan. This increase in intertidal emergent marsh results in a decrease of open water from the 30 percent originally proposed under Empire Tract Alternative E to 20 percent, and a decrease in intertidal mudflat from the originally proposed 25 percent to 10 percent.

Since this alternative is essentially the same as Empire Tract Alternative E, but with a different mitigation plan, it is only discussed in the text under Chapters 7 and 8 in cases where the impacts or benefits from this alternative would differ from Empire Tract Alternative E with its original wetland mitigation plan.

5.5.2 Construction and Roadway Alternatives

5.5.2.1 Site Preparation Alternatives

Alternative methods for the placement of fill, foundation construction, and storm water management were evaluated to determine whether feasible alternatives exist that would reduce environmental impacts. The alternative methods considered are presented below.

Fill Material

The proposed development will require approximately 2.7 million cubic yards of clean fill material. A fill transportation, staging, and placement schedule would be planned depending on the fill material selected. Selection of fill material considered the following:

- source of fill material;
- possibility of material reuse;
- temporary storage on site; and
- soil erosion and sediment control measures.

Clean fill would be transported to the site by a combination of truck, railroad, and/or barge. An on-site fill staging plan would be implemented along with temporary construction, sedimentation, and erosion control measures for each fill stage.

The goal of site-filling is to raise the site grade to the proposed elevation by the most efficient and expedient methods possible while minimizing post-construction settlement. Because of the low permeability of the compressible layers on the site, it is desirable to accelerate the consolidation process in order for the applicant to achieve a practical and cost-effective schedule. For this purpose, the use of prefabricated vertical drains (PVDs) is proposed. The PVDs allow the consolidating soil layers to drain more efficiently, thus reducing the time required to achieve total settlement.

Empire, Ltd. proposes to stage the filling that would allow construction without creating large slope instabilities and deep-seated bearing failures. Filling would be relatively uniform across the site with regard to time rate of placement. Specific heights of fill and associated staging time periods were analyzed to allow the weak varved clays time to gain strength under the applied loading. A plan has been developed to minimize the rapid loading of the soft soils that could result in spreading. It is proposed that fill would not be placed at more than a 1:3 slope (vertical:horizontal) to minimize localized shear failures through the peat layer.

Foundation Construction

A number of different building foundation systems that would accommodate the subsurface conditions were considered for the structures in the proposed development. The two systems evaluated were spread footings and deep piles. The methods of construction were evaluated for performance, feasibility of construction, effect on the environment, and cost.

The use of deep piles to support buildings above the existing grade to minimize the placement of fill was considered but rejected for the following reasons:

- while a building could be supported above the existing grade on piles, placing the at-grade parking surrounding the building on piles would result in excessive cost compared to placement on fill;
- the habitat value of land under the elevated building would be minimal; and
- the land under the elevated buildings would be hydraulically isolated from the wetlands if fill were used with at-grade parking.

A seismic design and analysis of the foundation elements for the proposed project was performed in accordance with the seismic design requirements of Building Officials and Code Administrators (BOCA) code. Peak bedrock acceleration, which has a 10% chance of being exceeded in 50 years, is estimated to be approximately 0.15G, where G is the acceleration due to gravity. Given the presence of up to 40 ft of soft clays, silts and peat, the site soils are classified as type S3. The site coefficient of 1.5 would be used in the foundation design and analysis.

The use of spread footings would require the excavation of the peat layer and replacement with granular fill. The excavation and reuse of the peat layer is not considered by the applicant to be a practical or economical alternative. Given the presence of a thick compressible soil strata across

the majority of the site below the peat layer, a deep foundation system is planned, in conjunction with a structural floor slab that would be used for support and superstructure.

5.5.2.2 *Storm Water Management*

The NJDEP requires that storage be provided to detain the storm water to promote water quality and prevent flooding. Utilizing rainfall distribution as recommended by the United States Soil Conservation Service, a storm event that is used for water quality analysis is defined as an event during which 1.25 inches of rainfall falls within a 2-hour period improving water quality as a result of dilution. For such a storm, retain and release provisions could ensure that after development the site would generate no greater peak runoff than it would have before development. Wetlands have been shown to provide means of storm water treatment; however, provision of on-site water quality basins is the generally acceptable method for satisfying water quality requirements associated with the type of development proposed, and is required by NJDEP.

In the final design of the storm water management basins, the feasibility of a storm water by-pass system would be considered. A by-pass system would allow flow from the water quality storm to enter the basin, while rerouting the flows from larger storms via a by-pass directly into the wetlands. This would reduce the size of the water quality basins, and would not affect the ability of the basins to provide water quality treatment.

The NJDEP requirement to provide suitable runoff quality and quantity control could be met through storm water quality basins for most alternatives considered with the exception of Alternative D, under which runoff discharges directly into wetlands. The runoff from the development would pass through an on-site water quality basin before discharging into the wetlands areas. The proposed basins would provide storage volume in order to reduce water velocities and allow solids to settle out of suspension. Underground storage chambers have been utilized by some developments for storm water management. The advantages of using detention basins instead of the underground storage chambers are as follows:

- basins allow easy access to the entire structure for sediment removal;
- basins would be a source of open space for the development;
- the basins are easy to upgrade or adjust by manipulating the intake size; and
- basins convey larger storm events more efficiently.

Because the Empire Tract is at a downstream point of the watershed, the purpose of storm water quantity control is to release the flow to the Hackensack River as soon as possible so that the on-site peak flow rate would not coincide with the upstream flow peak.

A combination of wetlands storage, discharge via gravity through tide gates, and storm water pumping for high flow rates constitutes the proposed storm water quantity control method. The wetlands and pumping station could be designed to control storm water runoff discharge rates and water levels at or below the existing predevelopment levels in the surrounding area.

5.5.2.3 Roadway Alternatives and Footprint Minimization

5.5.2.3.1 Roadway Alternatives

The Empire Tract is served by a regional roadway network of existing state, county and local roadways that include the New Jersey Turnpike, New Jersey Route 3, New Jersey Route 17, New Jersey Route 120, Paterson Plank Road and Washington Avenue. The traffic studies performed for Alternatives D and E are presented in Sections 7.14 and 7.15. The existing regional transportation network is further described in Sections 6.14.1.

As described in Section 5.5.1.2, several development alternatives have been proposed for the Empire Tract over the past decade. Each development alternative included a transportation plan that met the vehicular access and traffic management needs of the development, and conformed to the regional transportation plan and State and local roadway requirements in effect at the time.

The overall goal of the development's transportation plan is to: a) provide connections from the development area (five project components) to the existing regional transportation network in the vicinity of the New Jersey Turnpike Interchange 18W and Route 120; b) provide transportation improvements to ensure that future levels of service on on-site proposed roadways and off-site roadways that would accommodate traffic from the development are acceptable (i.e., level of service D or better, see Section 7.15.1.3 for further details); and c) provide proper vehicular ingress and egress to the development components. Two paramount objectives of the transportation plans are to be compatible with government-sponsored regional roadway improvement projects and transportation plans and to conform to appropriate government roadway design standards and guidelines.

The transportation plans provide for connections from the clustered development area on the project site by one major roadway, the Route 120 Extension (also called Route 120A). This proposed on-site roadway would provide connections to the existing New Jersey Turnpike Interchange 18W by a series of proposed ramp connections compatible with the existing Interchange and Turnpike configuration. In addition, the Route 120 Extension roadway would connect to existing Route 120, either through a direct connection or through improvements on Paterson Plank Road. As determined by traffic studies summarized in Sections 7.14 and 7.15, the transportation plans for area roadways would provide for a series of on-site and off-site transportation improvements to ensure that future levels of service for roadways in the study area are acceptable, with implementation of appropriate mitigation measures, and vehicular ingress and egress to the development components are acceptable. The traffic studies also incorporated transportation plan recommendations and design standards and guidelines set forth by NJDOT, NJMC and NJTA.

Development Alternative Transportation Plans

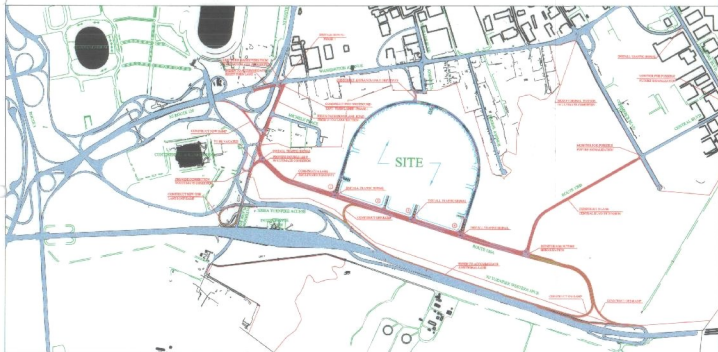
Three of the development alternatives, Meadowlands Mills Alternative, Empire Tract Alternative D and Empire Tract Alternative E, include transportation plans with an accompanying Traffic

Impact Study (see Section 7.16). Table 5.5-3 presents a summary of these development alternatives and their proposed roadway improvements. In 1996, the transportation plan for the Meadowlands Mills Alternative was designed to be compatible with the NJDOT Route 120 Relocation project (see Figure 4.2-3). Permits were obtained by the NJDOT in the late 1990s for the relocation project; however, NJDOT advised USACE when commenting on the July 2000 DEIS that the project had been de-activated. In 2001, the NJMC announced a Route 120 Master Plan Roadway System Plan. The transportation plan for Empire Tract Alternative E was designed to conform to this NJMC roadway plan for the region (see Figure 5.5-10).

The HMDC Master Roadway Plan System was not in existence at the time of publication of the DEIS, and hence was not a factor in the design of the proposed roadway layout for the project site at that time. As discussed in Section 7.15, for the purpose of analysis within this FEIS, it is expected that any of the potential alternatives for the proposed project would have to be constructed to be compatible with the HMDC plan. The applicant's design is being overseen and reviewed by a group of governmental transportation and regulatory agencies, including NJTA, NJSEA, NJDOT and NJMC.

Table 5.5-3
Summary of Transportation Needs for Development Alternatives and Proposed Roadway Improvements

Roadway Improvements	Development Alternatives and Transportation Needs		
	Meadowlands Mills Alternative	Empire Tract Alternative D	Empire Tract Alternative E
Route 120 Extension (also called Route 120A)	Provide regional transportation connections to the development area in the vicinity of the New Jersey Turnpike Interchange 18W and Route 120	Provide regional transportation connections to the development area in the vicinity of the New Jersey Turnpike Interchange 18W and Route 120	Provide regional transportation connections to the development area in the vicinity of the New Jersey Turnpike Interchange 18W and Route 120
Route 120B	Provide transportation connection from development to Commerce Boulevard to provide for additional regional and local northbound and westbound traffic movements	Provide transportation connection from development to Commerce Boulevard to provide for additional regional and local northbound and westbound traffic movements	Route 120B Not Required. Additional regional northbound and westbound traffic movements provided via Route 120 improvements to Route 17.
Connections to New Jersey Turnpike	Provide for connections to the New Jersey Turnpike. Two separate ramps proposed: one for southbound off and a second for southbound Turnpike on and northbound off (northbound on to be provided by Route 120 Relocation Project). Includes widening of portion of existing New Jersey Turnpike southbound for acceleration and deceleration lane.	Provide for connections to the New Jersey Turnpike. Three separate ramps proposed: one for southbound off, a second for southbound Turnpike on and northbound off, and a third for northbound on. Includes widening of portion of existing New Jersey Turnpike southbound for acceleration and deceleration lane.	Provide for connections to the New Jersey Turnpike. Two separate ramps proposed: one for southbound off and northbound on and a second for southbound Turnpike on and northbound off. Includes widening of portion of existing New Jersey Turnpike southbound for acceleration and deceleration lane.
Connections to Route 120 and Paterson Plank Road	Provide for connection to proposed NJDOT Route 120 Relocation Project	Provide for connection to Paterson Plank Road	Provide for direct connections to Route 120 and Paterson Plank Road through reconfiguration as proposed by NJMC Master Roadway System Plan
Connections to Local Roadways	Connects directly to Jomike Court, Barell Avenue and Michelle Place	Connects to Jomike Court	No connections proposed



SOURCE: TRC RAYMOND KEYES, 1999, TRAFFIC IMPACT STUDY



Figure 5.5-11

Table 5.5-4
Evaluation of Transportation Plan Alternatives

Development Alternatives	Transportation Alternatives Evaluation			Alternative Analysis Summary
	Conformance with Roadway Design Standards and Guidelines	Conformance with Regional Governmental Roadway Transportation Plans	Projected Environmental Impacts and Consequences	
Meadowlands Mills Alternative	Conforms to NJTA and NJDOT standards and guidelines.	Conforms to NJDOT Route 120 Relocation Plan, which has been deactivated by NJDOT. Does not conform to recent regional NJMC Route 120 Master Roadway System Plan.	Fill impacts from Route 120B; Route 120B may exacerbate local traffic volumes in Little Ferry; wetland fill impacts for roadway improvements estimated at 60 acres, including wetland fill impacts for improvements within New Jersey Turnpike right-of-way.	Alternative meets transportation needs of project. Alternative unacceptable due to: a) non-conformity with NJMC Route 120 Master Roadway System Plan; b) requires wetlands fill for Route 120B; and c) the largest acreage of wetland fill impacts for all transportation plan alternatives examined.
Empire Tract Alternative D	Conforms to NJTA and NJDOT standards and guidelines.	Provides only for connections to existing roadway network. Does not conform to recent regional NJMC Route 120 HMDC Master Roadway System Plan.	Fill impacts from Route 120B; Route 120B may exacerbate local traffic volumes in Little Ferry; wetland fill impacts estimated at 43.5 acres, including wetland impacts for improvements within New Jersey Turnpike and Paterson Plank Road right-of-ways.	Alternative meets transportation needs of project. Alternative unacceptable due to: a) non-conformity with NJMC Route 120 Master Roadway System Plan; b) requires wetlands fill for Route 120B; and c) the higher acreage of wetland fill compared to Empire Tract Alternative E transportation plan.
Empire Tract Alternative E	Conforms to NJTA and NJDOT standards and guidelines.	Conforms to regional NJMC Master Roadway System Plan for Route 120 adopted in 2001.	Elimination of Route 120B and associated fill impacts; requires expansion of fill impacts associated with Route 120 Extension; wetland fill impacts estimated at 42.0 acres, including wetland impacts for improvement to New Jersey Turnpike, Paterson Plank Road and Route 120 right-of-ways.	Alternative meets transportation needs of project. Alternative acceptable due to: a) conforms to NJMC Route 120 Master Roadway System Plan; b) eliminates Route 120B; and c) has the lowest acreage of wetland fill compared to the other alternative. Alternative meets project purpose and transportation agency requirements with the least impacts to wetlands.

The applicant would have to obtain approval from the NJTA, NJDOT and NJMC for the design prior to its implementation.

Alternative designs and roadway access to the project site are subject to State and Federal design guidelines and standards. Alternative roadway designs and alignments need to provide sufficient vehicular access to new development at acceptable levels of service. New roads must be integrated into the existing roadway network. Proposed roadway designs and alignments were reviewed by local transportation agencies that oversee major improvements and evaluated using their design guidelines, i.e., NJTA and NJDOT and American Association of State Highway and Transportation Officials (AASHTO) standards. No transportation design was carried forward in the development of the alternative transportation plans that did comply with the design standards and guidelines of these agencies.

The recommended transportation plan for the proposed project established prior to the completion of the NJMC Master Roadway Plan System included the filling of wetlands on site to construct the proposed Route 120 Extension (i.e., Route 120A), Route 120B and internal access roads for the development. Roadway improvements off site within the New Jersey Turnpike right-of-way would have consisted of connecting three new ramps in the vicinity of Interchange 18W to the proposed Route 120 Extension, and an auxiliary lane along the New Jersey Turnpike between the new ramps.

The applicant has discussed with representatives of the NJTA, NJSEA, NJDOT and NJMC various potential alternate ramp locations, roadway alignments, roadway connections and transportation improvements related to several development alternatives. These include the Meadowlands Mills Alternative, the Meadowlands Town Center, and the Empire Tract Alternative Alternatives D and E. In addition to functional traffic and public safety considerations, the minimization of wetland fill was a criterion considered in the evaluation of the various alignments.

The various proposed project roadways and connections to existing roadways in the project area were developed as part of traffic studies used to identify functional traffic patterns, level of service results and safety for the project area and adjacent traffic study areas. Figure 5.5-11 shows the transportation plan envisioned under the Empire Tract Alternative D. The development of the NJMC Master Roadway Plan System represents an approach that minimizes wetland fill and addresses the traffic issues that the extension of Route 120 was intended to address.

The design for the New Jersey Turnpike ramp alignments was based upon the constraints set by the existing configuration of Interchange 18W, the need for minimum ramp spacing along the New Jersey Turnpike to maintain traffic safety and flow in conformance with NJTA design standards, and the need to provide adequate acceleration and deceleration ramp lengths along the New Jersey Turnpike. The NJTA design standards require a minimum of 2,500 feet between ramps in order to reduce vehicular weaving and provide for adequate acceleration and deceleration lane lengths. Ramp connections from the southbound New Jersey Turnpike must

provide a standard 2,500-foot minimum distance from the existing Sports Complex ramp. As a result, the proposed ramp connection must be located near the base of the New Jersey Turnpike's Hackensack River Bridge. Locating this ramp connection closer to Interchange 18W (i.e., moving it south along the New Jersey Turnpike) is not feasible or practicable due to design constraints and traffic safety standards.

Construction of the proposed ramp connections in the vicinity of the New Jersey Turnpike Interchange 18W would result in wetland fill. This fill would occur in the following areas:

- Connecting ramps from the New Jersey Turnpike, at the southern base of the Hackensack River Bridge (approximately 6.4 acres on the Empire Tract);
- Connecting ramps from the New Jersey Turnpike extending from the existing Sports Complex ramp, near Interchange 18W toll plaza (approximately 0.4 acres off-site); and
- Widening of the southbound New Jersey Turnpike mainline to accommodate the proposed auxiliary lane between the proposed ramps (approximately 1.5 acres off-site).

5.5.2.3.2 Footprint Minimization

Meadowlands Mills Alternative Transportation Plan

This transportation plan conforms to NJTA and NJDOT traffic safety and roadway design standards and guidelines. The plan also conforms to the de-activated NJDOT Route 120 Relocation Plan, but does not conform to the current NJMC Route 120 Master Roadway System Plan. Levels of service with the proposed roadway improvements would be deemed acceptable. Section 5.5.1.4.2 describes the 206 acres of total wetlands fill needed for the Meadowlands Mills Alternative, of which approximately 60 acres of fill would be for transportation improvements (i.e., 58 acres for on-site roadways and an additional 2 acres of wetlands fill for off-site transportation-related improvements within the New Jersey Turnpike right-of-way). The Meadowlands Mills Alternative Transportation Plan is an unacceptable transportation plan since it does not conform with the current governmental transportation plan for the region (NJMC Route 120 Master Roadway System Plan), requires wetlands fill for Route 120B, and has the largest acreage of wetlands impacts compared to the other transportation plan alternatives.

Empire Tract Alternative D Transportation Plan

This transportation plan conforms to NJTA and NJDOT traffic safety and roadway design standards and guidelines. The plan does not conform to the NJMC Route 120 Master Roadway System Plan, but connects to the existing roadway network of Paterson Plank Road, the New Jersey Turnpike and Commerce Boulevard via Route 120 Extension and Route 120B. Levels of service for the proposed roadway improvements would be acceptable. Section 5.5.1.4.6

describes the 134 acres of total wetlands fill for Empire Tract Alternative D, of which approximately 43.5 acres is for transportation improvements (i.e., 41.5 acres of wetlands fill for on-site roadways and 2 acres of wetlands fill for off-site transportation-related improvements within the New Jersey Turnpike right-of-way). The Empire Tract Alternative D Transportation Plan is an unacceptable transportation plan since it does not conform with the current governmental agency transportation plan for the region (i.e., NJMC Route 120 Master Roadway System Plan), requires wetlands fill for Route 120B, and has a slightly larger wetland fill acreage compared to the Empire Tract Alternative E Transportation Plan.

Empire Tract Alternative E Transportation Plan

This transportation plan conforms to NJTA and NJDOT traffic safety and roadway design standards and guidelines and the NJMC Route 120 Master Roadway System Plan. Levels of service for the proposed roadway improvements, with traffic mitigation measures in place, would be deemed acceptable (see Section 7.15.3). Section 5.5.1.4.7 describes the 134 acres of total wetlands fill for Empire Tract Alternative E, of which approximately 42 acres is for transportation improvements (i.e., 39.5 acres of wetlands fill for on-site roadways and 2.5 acres of wetlands fill for off-site transportation related improvements within the New Jersey Turnpike, Paterson Plank Road and Route 120 right-of-ways).

Notwithstanding the elimination of Route 120B from the Empire Tract Alternative E transportation plan, because of the increase of transportation requirements mandated by the NJMC Route 120 Master Roadway System Plan, there is only a small reduction in the total wetlands fill compared to the Empire Tract Alternative D transportation plan. Under the Empire Tract Alternative E transportation plan these additional requirements include a cloverleaf design for the southbound off and northbound on ramp intersection between the Turnpike and Route 120 Extension, direct connections from Route 120 Extension to Route 120, and two feeder roads from the Route 120 Extension to Paterson Plank Road (see Figure 5.5-10). These additional improvements require a larger wetlands fill footprint for Route 120 Extension under the Empire Tract Alternative E transportation plan. In addition, a slightly higher acreage of wetlands fill for off-site roadway improvements is required under the Empire Tract Alternative E transportation plan compared to the Empire Tract Alternative D transportation plan due to roadway improvements associated with Route 120 near Washington Avenue and Paterson Plank Road.

Roadway alignment alternatives for the ramps to the Turnpike and Route 120 Extension were considered during the design of the transportation plan. However, as discussed earlier, the alternatives are constrained by the regional roadway requirements. A shorter length of Route 120 Extension is not deemed to be feasible due to the NJTA ramp separation design standard discussed above that dictates the location of one ramp connection to the Turnpike near the base of the Hackensack River Bridge. The Route 120 Extension must extend from the development area through wetlands to this ramp location. The actual ramp configuration is also set by a NJTA ramp design standard that requires a minimum turning radius to allow for proper vehicle travel on and off the ramp. The straight alignment of Route 120 Extension to the southbound on and northbound off ramp minimizes wetland fill impacts. The curvilinear alignment of the most

southern portion of Route 120 Extension is the required geometry to allow for the connections to Route 120 and the current bridge crossing of Route 120 over Washington Avenue. A straight alignment of Route 120 Extension from the development area to Paterson Plank Road, although yielding a small decrease in wetlands fill area, would necessitate an intersection with a traffic light. This type of design would not provide for a continuous traffic flow along Route 120, and would not meet design guidance from the NJMC and NJDOT.

The roadway network associated with Empire Tract Alternative E has the smallest acreage of wetland fill impacts compared to the other roadway alternatives, and conforms with the current government transportation plan for the region (NJMC Route 120 Master Roadway System Plan). Empire Tract Alternative E eliminates Route 120B and its associated wetlands fill, and has wetland impacts from the roadways under this transportation plan that are concentrated at the southern end of the Empire Tract where the development is proposed, and that reduces fragmentation attributable to Route 120 B.

In addition to alignment selection to minimize wetland fill, several roadway construction techniques were evaluated to reduce potential impacts to wetlands. These techniques include embankment slope reduction, pile-supported structures, and roadway shoulder reduction. These techniques to minimize wetlands fill are discussed below. Measures to minimize wetlands fill must be reviewed and approved by the appropriate transportation agencies prior to implementation. This is especially important when the design varies from the agencies' standard roadway design. Feasibility of implementing the alternative designs to minimize wetland impacts is subject to approval by the appropriate transportation agencies.

Embankment Slope Reduction

The standard design for fill embankment for the ramp connections from the New Jersey Turnpike would use side slopes of 2:1. To minimize the wetlands fill footprint, the side slopes could be reduced to 1:1 with an engineered slope reinforcement construction technique. This reduction in side slopes from 2:1 to 1:1 would reduce wetlands fill along the on-site roadways by approximately 3.5 acres. The use of engineered slope reinforcement for a 1:1 side slope would require an additional \$50.00 per linear foot of roadway compared to the standard 2:1 side slope, and require approval from the reviewing transportation agency since 1:1 is not a standard side slope dimension. In addition, along certain portions of the roadways, the 2:1 side slopes would still be used to provide vegetated filter strips for water quality treatment of road runoff. This would not be possible with a side slope of 1:1.

Retaining walls could also be used to reduce the side slope width of an embankment and wetland fill area. Retaining walls provide a vertical structure to retain the ramp embankment fill, thereby eliminating the fill associated with the side slopes of the roadway embankment. Construction of a retaining wall, however, would still impact 5 to 10 feet of wetlands beyond the roadway footprint. The use of retaining walls would decrease the acreage of fill from the standard 2:1 side slope construction technique. In addition to the increased cost of constructing retaining walls compared to earthen embankments, an additional \$1,500.00 per linear foot of roadway, costs associated with a retaining structure are periodic and require maintenance costs that make this

design technique more expensive than embankment construction.

Pile-supported structures would have impacts on wetlands similar to impacts of retaining walls, and USACE considers use of elevated platforms over wetlands as having impact similar to filling of the wetlands. Pile-supported structures are an expensive embankment reduction technique. The applicant estimates they would cost an additional \$15,000 per linear foot of roadway for a four-lane section compared to standard embankment technique.

Roadway Berm Reduction

The proposed technique would construct the ramp connections from the New Jersey Turnpike with a standard 10-foot-wide berm on both sides of the roadway for the placement of guardrails, light poles and landscaping. In addition, along certain portions of the roadways, the berms could be used as vegetated filter strips for water quality treatment of road runoff. The berm could be reduced to a minimum of 3 feet wide, which would allow for the placement of guardrails and light poles, although not landscaping. This reduction in berm width from 10 to 3 feet would reduce wetlands fill along the on-site roadways. However it would be inconsistent with the agencies' request that the applicant provide a buffer between the roadways and the mitigation area. Landscaping and the use of the berm for roadway runoff water quality treatment and as a buffer to offset impacts from the project on wildlife would not be possible with a 3-foot-wide berm.

5.6 CONCLUSION

This FEIS has considered a comprehensive range of alternatives to the proposed project. The No-Action Alternative and off-site alternatives have been evaluated, as have on-site alternative project design configurations. A variety of methods of construction have also been considered, focusing on mitigating potential wetland impacts by using different techniques for fill and foundation construction, storm water management, and roadway alignments.

Within the alternatives analysis, the suitability of each potential alternative for achievement of the project purpose has been evaluated. The environmental impacts associated with each alternative have also been considered, along with the potential for avoidance, minimization and mitigation of adverse impacts. A focus of the analysis has been to identify and evaluate opportunities to reduce adverse impacts to wetlands by reducing development footprint, and thereby the wetland fill acreage.

The analysis has identified the No-Action alternative as a potential alternative. Under this alternative, the environmental conditions on the Empire Tract would be expected to remain the same as, or similar to, existing conditions.

With the potential exception of the former Military Ocean Terminal site at Bayonne, the *off-site alternatives* analysis for the proposed project did not identify any potential alternative sites, out of 103 sites that were evaluated that could provide a practicable alternative for the construction of the proposed project. All of the alternative sites that were eliminated are limited by physical, regulatory, environmental, logistical and/or economic constraints and would not fulfill the project purpose. With regard to the Military Ocean Terminal site at Bayonne, USACE has requested additional information to assess whether this site should be considered a practicable alternative that could be developed within a reasonable timeframe. In addition, USACE will consider additional information regarding the potential availability of the Continental Airlines arena site, and its ability to meet the applicant's stated project purpose.

The evaluation of *on-site alternatives* identified alternatives that would result in a lower amount of wetland fill and significantly lesser environmental impacts as compared to the 206-acre fill alternative that is the subject of Empire Ltd.'s permit application. Empire Tract Alternatives C, D, and E represent the greatest reduction in project footprint, and therefore wetland fill, of all the proposed alternatives, with the exception of the No-Action Alternative. Notwithstanding its reduced requirement for wetland fill, Empire Tract Alternative C was not considered acceptable due to the location of its footprint and its associated environmental impacts. Empire Tract Alternatives D and E, including the revised version of Alternative E with an updated wetland mitigation plan, were retained for analysis in this FEIS. These alternatives (Empire Tract Alternatives D, E, and Revised E) were developed in the course of the environmental review process, during which proposed alternatives were developed, evaluated and refined to minimize wetland fill and other environmental impacts. Meadowlands Mills Town Center, Meadowlands Mills Alternative, and Empire Tract Alternatives A, B, and C (all discussed in the DEIS) have all been eliminated during this process, in an effort to avoid and/or minimize environmental impacts and wetland fill while still achieving the project purpose.

USEPA Guidelines under Section 404 of the Clean Water Act indicates that no permit may be granted if there is a practicable alternative to the proposed action that would have less adverse impact on the aquatic environment, provided the alternative does not have other significant adverse environmental consequences (40 CFR Part 230.10a). Since Empire Tract Alternatives D, E and Revised E would incur lesser environmental impacts than any of the other alternatives these two alternatives are considered preferable to any other of the on-site construction alternatives. For this reason, Empire Tract Alternatives D, E, and Revised E are carried forward for further analysis in Section 7 of this FEIS. A detailed description of the wetland mitigation designed to offset losses for the Empire Tract Alternatives D, E, and Revised E is provided in Sections 8.1, 8.2, and 8.3.

5.6.1 Agency Preferred Alternative

The federal action under consideration in this EIS is the decision whether or not to issue a Department of the Army permit. Alternatives available to USACE are to issue a permit, to issue a permit with conditions or to deny a permit. In accordance with Corps of Engineers regulations and policy, the agency decision among those alternatives will be stated in a Record of Decision made at the time of the permit decision, after public comment on the final EIS. USACE has no preferred alternative at this time, and no preferred agency alternative is stated in this FEIS.

SECTION 5.0 REFERENCES

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